

Infant Sleep Disturbances: contrasting perspectives on intervention for Infant
Sleep Disturbance (ISD) within popular media culture

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In a field in which strong feelings are aroused and almost everyone has some sort of vested interest, clear unbiased thinking is not always easy.

(Bowlby, 1982, p. 667)

Table of Contents

ACKNOWLEDGEMENTS	I
ABSTRACT	II
ABBREVIATIONS.....	III
CHAPTER ONE	4
TYPICAL INFANT SLEEP	4
SLEEP-STATE ORGANISATION.....	5
REGULATORY PROCESSES.....	6
THE IMPORTANCE OF SLEEP FOR INFANT DEVELOPMENT	7
BEHAVIOURAL MODELS OF INFANT SLEEP DEVELOPMENT.....	10
INFANT SLEEP DISTURBANCE (ISD).....	12
IMPACT OF INFANT SLEEP DISTURBANCE (ISD).....	15
EVIDENCE-BASED TREATMENT OPTIONS.....	15
<i>Psychoeducation on sleep hygiene.....</i>	<i>16</i>
<i>Extinction.....</i>	<i>16</i>
<i>Modified extinction.....</i>	<i>18</i>
<i>Parental presence.....</i>	<i>18</i>
<i>Extinction with medication.....</i>	<i>18</i>
POST BEHAVIOURAL INTERVENTION EFFECTS	19
SOURCES OF HELP FOR PARENTS	20
<i>Information sources.....</i>	<i>20</i>
<i>Professional advice.....</i>	<i>21</i>
THE CURRENT STUDY	22
<i>Rationale.....</i>	<i>22</i>
<i>Research objective.....</i>	<i>22</i>
CHAPTER TWO.....	24
SOURCE SELECTION	25
DATA COLLECTION.....	25
CODING DATA.....	25
IDENTIFYING CATEGORIES	26
INTERPRETATION OF DATA	26
RESULTS	27
THEME 1: INFANT FACTORS	28
<i>Breastfeeding and infant sleep.....</i>	<i>28</i>
<i>Questions that emerge from the category include:</i>	<i>32</i>
THEME TWO: PARENTAL FACTORS AND INFANT SLEEP	32
<i>A: Parental responsiveness at sleep times.....</i>	<i>33</i>
<i>Question that emerges from this category:</i>	<i>35</i>
<i>B: Infant attachment and development of sleep.....</i>	<i>35</i>
<i>Question that emerges from this category:</i>	<i>36</i>
<i>C: Co-sleeping and attachment.....</i>	<i>36</i>

<i>Questions that emerge from this category include:</i>	41
<i>D: The attachment parenting philosophy and infant sleep.</i>	41
<i>Question that emerge from this category include:</i>	42
THEME THREE: INTERVENTIONS	42
<i>A: Efficacy of behavioural sleep interventions.</i>	42
<i>B: Claims that behavioural sleep interventions will affect attachment.</i>	50
<i>Question that emerges from this category:</i>	52
<i>C: Claims behavioural sleep interventions affect cortisol levels and infant brain development.</i>	52
<i>Question that emerges from this category:</i>	56
<i>D: Claims regarding alternative interventions for infant sleep disturbance.</i>	56
<i>Question that emerges from this category:</i>	57
<i>E: Claims infants will grow out of sleep disturbance without intervention.</i>	57
<i>Question that emerges from this category:</i>	59
SUMMARY OF RESULTS	59
CHAPTER THREE	60
RATIONALE	60
ANALYSIS OF THE RESEARCH	61
QUESTION: CAN BREASTFEEDING AFFECT SLEEP	62
<i>Research cited by the parenting resources.</i>	62
<i>Evidence-based research findings.</i>	63
<i>Summary of findings.</i>	66
QUESTION: COULD A BEHAVIOURAL SLEEP INTERVENTION AFFECT THE CONTINUATION OF BREASTFEEDING?	67
<i>Evidence-based research findings.</i>	67
<i>Research cited by the parenting resources.</i>	67
<i>Evidence-based research findings.</i>	68
<i>Summary of findings.</i>	72
QUESTION: CAN AN INFANT'S ATTACHMENT AFFECT THEIR DEVELOPMENT OF SLEEP AND VICE VERSA?	72
<i>Research cited by the parenting resources.</i>	72
<i>Evidence-based research findings.</i>	72
<i>Summary of findings.</i>	78
<i>Research cited by the parenting resources</i>	79
<i>Evidence-based research findings.</i>	79
<i>Summary of findings.</i>	80
QUESTION: DO SOLITARY SLEEPING INFANTS SLEEP BETTER THAN BED-SHARING INFANTS?	81
<i>Research the cited by parenting resources.</i>	81
<i>Evidence-based research findings.</i>	81
<i>Summary of findings.</i>	84
QUESTION: ARE POSITIVE OUTCOMES MORE FAVOURABLE FOR THOSE INFANTS WHO BED-SHARE COMPARED TO INFANTS WHO DO NOT?	85
<i>Research cited by the parenting resources.</i>	85
<i>Evidence-based research findings.</i>	86
<i>Summary of findings.</i>	89
QUESTION: DO ATTACHMENT PARENTING PRACTICES PRODUCE BETTER OUTCOMES FOR INFANTS?	90
<i>Research cited by the parenting resources.</i>	90
<i>Evidence-based research findings.</i>	91
<i>Summary of findings.</i>	95

QUESTION: CAN A SLEEP INTERVENTION CAUSE AN INCREASE IN CORTISOL LEVELS THAT WILL AFFECT AN INFANT'S TYPICAL DEVELOPMENT?	96
<i>Research cited by the parenting resources.</i>	96
<i>Evidence-based research findings.</i>	97
<i>Summary of findings.</i>	101
QUESTION: ARE ANY OF THE INTERVENTIONS PROPOSED BY THE PARENTING RESOURCES EVIDENCE-BASED?	102
<i>Research cited by the parenting resources.</i>	102
<i>Evidence-based research findings.</i>	102
QUESTION: CAN INFANTS GROW OUT OF SLEEP DIFFICULTIES WITHOUT INTERVENTION?	103
<i>Research cited by the parenting resources.</i>	103
<i>Evidence-based research findings.</i>	103
<i>Summary of findings.</i>	104
OVERALL CHAPTER SUMMARY	104
CHAPTER 4.....	105
COMPARING THE FINDINGS WITH EXISTING EVIDENCE-BASED LITERATURE.....	105
<i>Category 1: Breastfeeding and infant sleep.</i>	106
<i>Category 2: Parental responsiveness at infant sleep times.</i>	107
<i>Category 3: Infant attachment and development of sleep.</i>	108
<i>Category 4: Co-sleeping and infant sleep.</i>	111
<i>Category 5: Attachment parenting and infant sleep.</i>	113
<i>Category 6: Efficacy of behavioural sleep interventions.</i>	115
<i>Category 7: Behavioural sleep interventions and attachment.</i>	116
<i>Category 8: Sleep interventions and cortisol.</i>	118
<i>Category 9: Alternative interventions for infant sleep disturbance.</i>	121
<i>Category 10: Infants grow out of sleep disturbance without intervention.</i>	122
METHODOLOGICAL DIFFICULTIES	122
LIMITATIONS OF THE PRESENT STUDY	124
STRENGTHS OF THE PRESENT STUDY	125
IMPLICATIONS FUTURE RESEARCH DIRECTIONS	126
CONCLUSION.....	128
APPENDICES.....	130
APPENDIX A: PARENTING RESOURCES TEXT	130
APPENDIX B: PARENTING RESOURCES WEBSITES	152
REFERENCES	172

Table of Figures

Figure 1: Map of the three phase process (Graven & Browne, 2008)	8
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Abstract

The aim of this study was to determine what information pertaining to Infant Sleep Disturbance (ISD), and intervention for it, are portrayed in two forms of popular parenting resources (books and websites). Through using a content analysis of the two forms of parenting resources ten categories emerged and conflicting text data were identified. Twelve questions that emerged from this conflicting data were then investigated through evidence-based literature reviews. The findings showed that although some parenting resources claim detrimental effects of infant sleep interventions no research study has concluded so. This study highlights the need for evidence-based information being presented to parents and it also highlights the need for a continuance of ongoing research into interventions that combine both behaviour and attachment theory.

Abbreviations

AAIMHI	Australian Association Infant Mental Health Incorporated
ANS	Autonomic nervous system
BISQ	Brief Infant Sleep Questionnaire
CARE	Child-Adult Relationship Experimental
CIO	Cry-it-Out
CNS	Central nervous system
DASS	Depression Anxiety Stress Scale
EA	Emotional Availability
HPA	Hypothalamic-pituitary-adrenal axis
ICSD	International Classification of Sleep Disorders
ISD	Infant Sleep Disturbance
ISQ	Infant Sleep Questionnaire
MDI	Mental Development Index
MFQ	Maternal feeling questionnaire
NREM	Non-rapid eye movement
PERB	Post extinction response burst
REM	Rapid eye movement
SD	Discriminative stimulus
SDQ	Strengths and Difficulties Questionnaire
SES	Socioeconomic status
SIDS	Sudden Infant Death Syndrome
SUDI	Sudden Unexplained Death in Infancy

Chapter One

This thesis investigates debates between those espousing contrasting perspectives on intervention for Infant Sleep Disturbance (ISD) within popular media culture. A content analysis was carried out on a selection of parenting books and websites because this is where caregivers are commonly confronted by the differing debates. Categories that emerge from this analysis are most likely already known by parents, practitioners working with families, and the researcher, for example, concerns about the effects of infant sleep interventions on attachment and cortisol production (as an index of stress). This in-depth analysis of exactly what is being conveyed in these parenting resources has drawn out the myths and the evidence-based advice. Particular emphasis was placed on the research cited in the popular media culture and on investigating how factual and accurate it is to the research/theories it is ascribing to. The purpose of systematically researching this literature is to provide clear and effective information to parents and professionals who are seeking advice on successful intervention for ISD.

Prior to outlining the investigation the following are discussed to provide the background that is necessary for evaluation of the parenting information examined: research on the importance of sleep for infant development, typical infant sleep, sleep-state organisation, regulatory processes, behavioural models of infant sleep development, development of ISD, impact of ISD, evidence-based treatments for ISD and their effects, and the sources of help for parents.

Typical Infant Sleep

The development of infant sleep coincides with the rapid development in the domains of cognition, growth, and behaviour (Lushington, Pamula, Martin, & Kennedy, 2013).

Development can be observed in the neurophysiology of the infant and emerges as their central

nervous system (CNS) matures and through the regulatory process of homeostatic, ultradian, and circadian rhythms (described below). These regulatory processes control the timing of the sleep-wake states. A typical new born infant sleeps for around 16-18 hours over a 24 hour period; this amount decreases to around 14 hours by 9 months of age, and by 2 years of age to around 13 hours (Ferber, 2013).

Sleep-State Organisation

The sleep states are broadly categorised as rapid eye movement (REM) sleep (active sleep) and non-rapid eye movement (NREM) (quiet sleep). REM sleep is characterised by eye movements that can be rapid or slow rolling. Motor activity occurs which is sporadic and dispersed with phases of quiescence. Vocalisations including whimpering, crying, and grunting may be present as may sucking, smiling, frowning, and twitching (Lushington et al., 2013). NREM sleep is broken in to four phases and is characterised by a lack of movement and an absence of REMs. NREM phase 1 involves gradual loss of awareness of the external environment. NREM phase 2 is when total loss of awareness occurs. NREM phase 3 and NREM phase 4 are commonly referred to as states of *deep sleep* (Fuller, Gooley, & Saper, 2006). It is not until 6 months that all four of these phases can be identified when observed by electrocardiogram (ECG) (Guilleminault & Souquet, 1979).

During the three month neonatal period sleep states are disorganised as underlying brain structures are undeveloped as are regulatory processes. Sleep states cannot easily be observed as either REM or NREM during this period, therefore are classified as *indeterminate sleep*. By 3 months sleep maturation coincides with significant neurodevelopment and CNS organisation (Sheldon, 1996). Gradually over the ages of 3 months to 12 months sleep resembles consolidated

periods that are longer in their duration but less frequent in their occurrence. In early infancy, a sleep period usually begins in REM sleep and then proceeds into non-REM sleep. At some point during the first three months this changes into the onset of the sleep period beginning with non-REM (Thiedke, 2001). The duration of both sleep and wake periods lengthens throughout infancy. By the time an infant is 8 months old they are likely to spend one third of the time in REM sleep and two thirds of the time in non-REM sleep.

Regulatory Processes

A *circadian rhythm* is any biological process that repeats itself within approximately a 24 hour period. The internal circadian clock remains constant without the interference of outside stimuli and is referred to as a *free running* environment. Normal sleep in adults follows a circadian sleep-wake rhythm that is synchronised to the 24 hour period (approximately) by zeitgebers (time-givers) or external environmental cues. Examples of zeitgebers include light, temperature and social interactions (McMillen, Kok, Adamson, Deayton, & Nowak, 1991). Before the age of 3 months there is little evidence of predictable circadian rhythmicity (Rivkees & Hao, 2000), but, by 3 months of age, when sleep-wake cycles begin to consolidate, a regular rhythm can be observed (deWeerd & van den Bossche, 2003; McMillen et al., 1991; Henderson, France, Owens, & Blampied, 2010).

A second regulatory process reported by Lushington et al. (2013) is *thermoregulation*. Although under-researched in infants they argue there is enough evidence to show that the circadian rhythm of body temperature and that of sleep are closely related. By 3 months of age the variation of body temperature rhythmicity corresponds to the variation in REM sleep rhythmicity (Abe & Fukui, 1979; Glotzbach, Edgar, & Ariagno, 1995). Lushington et al. (2013) argue that

sleep onset and maintenance may be facilitated by the emergence of a stable core temperature rhythm.

Ultradian rhythms are a third mechanism outlined by Lushington et al., (2013) that are involved in sleep-wake regulation. Ultradian rhythms are cycles repeated throughout the circadian 24 hour period and are evident in the cycling of the sleep states of REM and NREM. These cycles progressively lengthen as a child develops. At 1 month of age these cycles are approximately 60 minutes in length and these increase in length to approximately 90 minutes by 5 years (Sheldon, 1996).

The Importance of Sleep for Infant Development

It is widely recognised that sleep is essential for mental and physical health wellbeing and functioning from infancy to old age. Typical infants sleep approximately 14 months in their first two years of life, (Dahl, 1996), about 60% over a 24 hour period (Lushington et al., 2013). Given the intensity of development over an infant's first years, it is understood that sleep has a critical role in the development of psychological, physical, and cognitive wellbeing in infants and children. Lushington, et al. (2013) cite research showing that sleep plays a vital role in neurocognitive development in the areas of brain growth and memory consolidation (Graven & Browne, 2008; Miyamoto & Hensch, 2003; Peirano & Algarin, 2007). The preservation of sleep cycles is vital for construction of sensory systems. Both REM and NREM sleep cycles are crucial for neuroplasticity, that is, the brain's capacity to respond to new environments and needs by learning, adapting, and changing (Graven & Browne, 2008; Hobson & Pace-Schott, 2002). The sensory systems in typical development, that require REM sleep from 28 weeks gestational age, are: somatesthetic (touch), kinesthetic (motion), proprioception (position), chemosensory

(smell and taste), auditory (hearing), vision, limbic (emotion) social learning, and the hippocampus (memory). Deprivation of REM sleep states in infants between the ages of 30 weeks gestation and 4 to 5 months post-term (Graven & Browne, 2008) has been associated with delay or disorder of the development of these sensory systems.

Further, long-term memories and learning need both REM and NREM sleep. Graven's 2006 model of sleep dependent memory consolidation and long-term storage (cited in Graven & Browne, 2008, p.175) maps the three phase process of acquisition, pre-consolidation, and consolidation (Figure 1).

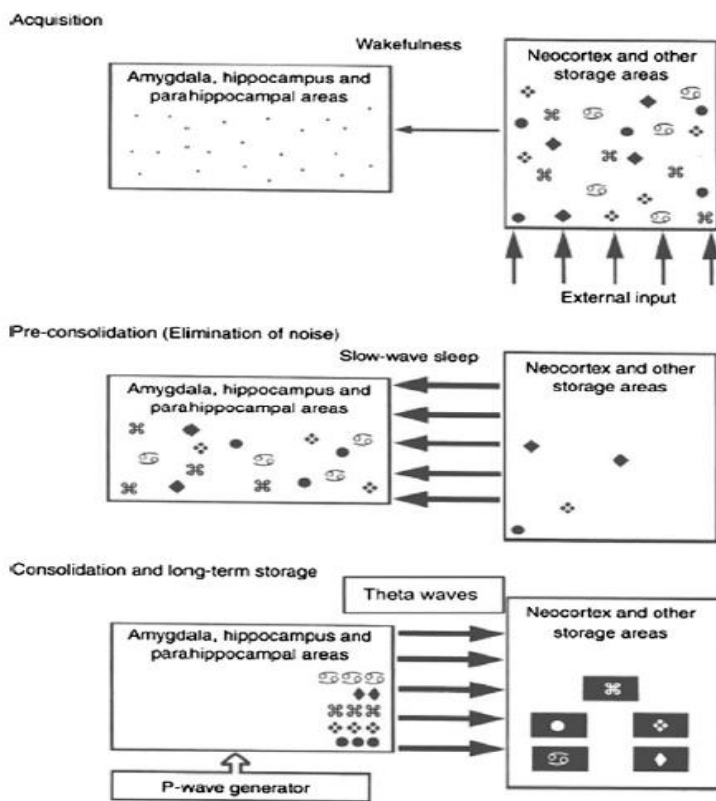


Figure 1: Map of the three phase process (Graven & Browne, 2008)

To retain learning and memories, a complete sleep cycle is necessary including wakefulness, NREM, and REM sleep. During wakefulness there is a period of acquisition where learning enters the short-term memory circuits. The neocortex transfers the information to the hippocampus and in a pre-consolidation phase during NREM sleep. The third phase of consolidation involves REM sleep when the hippocampus organises the information and transfers it back to the neocortex, as well as to other storage areas, and only then is a permanent connection made.

Bernier, Carlson, Bordeleau, and Carrier (2010) found that infants with a higher proportion of sleep at 12 and 18 months performed better on executive functioning tasks at 18 and 26 months than those with less sleep organisation. Weisman, Magori-Cohen, Louzoun, Eidelman, and Feldman (2011) found that premature infants whose sleep transition shifted smoothly between quiet sleep and wakefulness, compared to those who cycled between short active and quiet sleep, had better development outcomes at 5 years. The outcomes include better cognitive development, greater neuromaturation, less negative emotionality, as well as better executive and verbal competences.

Lushington et al., (2013) suggest that recent studies support the idea that there are sensitive periods when sleep affects brain development. For example, Ardit-Babchuk, Feldman, and Eidelman (2009) found infants who spent less time in REM activity scored lower on the Mental Development Index (MDI) of the Bayley II at 6 months compared to those who experienced higher REM activity. Bernier et al. (2010) found a greater amount of sleep at night-time at time period 12 months and 18 months was related to better performance outcomes on executive functioning task at 18 and 26 months. Weisman et al. (2011) identified three types of sleep-state-

transition patterns in 143 infants with the mean gestational age of 37 weeks. Those whose sleep-state transitions were characterised by quiet sleep and wakefulness exhibited better developmental outcomes at 5 years of age compared to those who cycled between short episodes of active and quiet sleep pattern and between active sleep and cry pattern.

Behavioural Models of Infant Sleep Development

Behavioural models view sleep as a state which develops both at a physiological level and at a behavioural level in the sense that behaviours are learnt that lead to the transitions between waking and sleep, and vice versa. Sleep is neither a respondent nor operant behaviour and is viewed as a biobehavioural state where both operants and respondents are involved in entry into, and out of, the state (Blampied & France, 1993; Blampied 2013; Blampied & Bootzin 2013). Sleep typically develops through caregivers providing an environment of good sleep hygiene that helps the infant maintain good sleep habits. Sleep hygiene refers to a list of behaviours and environmental conditions including positive bedtime routines and consistent bedtimes (Stepanski & Wyatt, 2003).

The caregivers' parenting style, culture, and values have an impact on how consistently the principles of sleep hygiene are enforced and how they define appropriate sleep habits, behaviour, and duration. The behavioural term of discriminative stimulus (SD) is essentially the particulars of their environment that the infant associates with going to sleep. It is this association that when made/learnt brings about the onset of sleep and helps with re-initiating sleep upon night wakings.

For sleep initiation to occur two key assumptions are proposed by Blampied and Bootzin (2013). Firstly, appropriate SDs need to control the operant chain of readying and then falling asleep. Each link in the chain may have separate SDs, with both external and internal cues, and each link

may provide a SD for the next in the chain. An example of this in early infancy would be when a parent provided SD (e.g. feeding or cuddling) starts the sleep behavioural chain. Secondly, sleep initiation may be difficult if sleep behaviours are competing with inappropriate sleep activities. In addition, a mixture of positive and negative reinforcers may be maintaining the competing behaviours and an SD that would normally control falling asleep may begin to control non-sleeping behaviours. An example of this could be a tired infant who is smiling and babbling in their cot being positively reinforced by parental attention. The sleep behaviours involved with quieting down in the cot are competing with behaviours inappropriate for the onset of sleep that are being reinforced by parental attention.

A period of behavioural quietude is needed for an infant to transition into sleep. Behavioural quietude is defined by Blampied (2013, p. 174), as “the reduction of overt motor activity, covert cognitive activity and perceptual stimulation to a low level”. This time of behavioural quietude is an element of the bedtime behavioural chain that needs to be controlled by appropriate stimulus control to be acquired. An example of an appropriate stimulus is a self-soothing object such as thumb-sucking, a soft toy, or a special blanket.

The behavioural chains that maintain and strengthen the appropriate sleep patterns need the appropriate reinforcement contingencies. Sleep-compatible reinforcement contingencies involve parental responses that are not of reinforcing intensity. An example of this may involve a setting event for the baby’s behavioural quietude with a calm dark non-interactive environment. The intrinsic reinforcer for this behavioural quietude is going to sleep (Blampied & Bootzin, 2013). Sleep-incompatible reinforcement contingencies occur when a parental response is of a reinforcing intensity such as picking the infant up when the infant cries.

Infant Sleep Disturbance (ISD)

New Zealand (Fergusson, Shannon, & Horwood, 1981) and Australian (Armstrong, Quinn, & Dadds, 1994) studies have found that 15-20% of infants take an excessive amount of time to get to sleep while 10-25% of infants are chronic night wakers, and between 36-46% of parents report infant sleep problems (Hiscock & Wake, 2001; Armstrong et al., 1994)). ISD is defined by Blampied and France (1993) as bed-refusal, sleep onset delay, night waking, and reactive co-sleeping. A definition of primary ISD involves the child never settling into appropriate sleep patterns. A child who has learnt to settle, and then because of an illness or disruption in their environment develops a sleep disturbance, is classified as a secondary ISD.

An infant is not identified as presenting with ISD until after 6 months of age. Waking and settling problems are normative prior to this age and sleep consolidation may not be achieved until one year (Henderson, et al., 2010). Whether or not an infant is classified as having an ISD is usually defined by the infant's caregivers. Many parents manage sleep onset delays and night waking without seeking help. Parental philosophy, psychopathology, culture, family values, and societal beliefs all influence whether caregivers classify their infant as having a sleep disturbance (Mindell, Kuhn, Lewin, Meltzer, & Sadeh, 2006.)

Night wakings, which are often seen at the end of a sleep cycle, (Dahl, 1998) can occur five to seven times per night in sleep in typical children (Mindell, Owens, & Carskadon, 1999), and can appear as partial or semi-arousals and generally occur when in a REM sleep state. How an infant signals and resettles after these semi-arousals can vary greatly, depending on individual differences in infant temperament, infant self-soothing ability, and caregiver behaviour. These

differences, along with other behavioural, psychosocial, and biological factors together influence the development of infant sleep, or lack of.

Just as the development of infant sleep is influenced by various factors, the development of ISD is complex and involves a variety of possible contributing factors. These can include behavioural, psychosocial (including maternal depression and infant attachment style), and temperament. Behavioural factors that can influence the development of ISD include the infant not acquiring good sleep habits through a caregiver being unable to structure good sleep routines, and a favourable sleeping environment. This includes recognising sleep cues and decreasing stimulation around sleep times (Morrell & Steele, 2003). Behavioural coercion traps are associated with the development of ISD. Patterson & Reid (1973) describe coercion traps where both members of a dyad try to escape (avoid) the aversive behaviour being carried out by the other person. In the development of sleep disturbance this may involve an infant waking and crying in response to being alone in their cot, the parent then responds with picking the infant up and talking to them (a parental response of reinforcing intensity) as to avoid the adverse event (the infant crying) for the parent. The infant learns to cry when they wake because they have been reinforced to do so.

Psychosocial factors that are associated with ISD include ambivalently attached infants (Morrell & Steele, 2003), maternal insecure attachment (Hiscock, 2010), caregiver separation anxiety (Sadeh, Tikotzky & Scher, 2010), maternal cognitions, and perceptions about interacting with their infant at night-time (Morrell & Steele, 2003), parenting style, maternal depression, and anxiety. Teti and Crosby (2012) observed mothers with depressive symptoms and dysfunctional worries about their infant's needs at night-time as being more hyper-responsive to vocalisations

that were characterised as non-distressed babbling and cooing compared with mothers with few (depressive) symptoms. When these vocalisations occurred they were more likely to pick up their infant and nurse, or even move their sleeping infant from their cot to the parental bed. Teti and Crosby (2012) wondered if mothers who are excessively worried about their infants, particularly at night-time, intervene in these ways to alleviate their own anxieties and satisfy their own emotional needs rather than their infant's need for sustenance or comfort.

Research has shown an association between maternal depression and ISD (Bayer, Hiscock, Hampton, & Wake, 2007; Messer & Martin, 1993; Warren, Howe, Simmens & Dahl, 2006). One mechanism that may account for this association is a biological vulnerability, with higher levels of cortisol and norepinephrine in depressed mothers prenatally and postnatally associated with infant night waking (Armitage et al., 2009; Field et al., 2006). Meltzer and Mindell (2007), found that maternal sleep was a significant predictor of maternal stress, mood, and fatigue, and that their sleep was significantly predicted by that of their child. Exhausted and depressed parents may compromise their infant's healthy developmental growth by providing inconsistent, unresponsive, or overly anxious environments (Sadeh, Mindell, & Owens, 2011, p. 335).

Biological factors that influence ISD development include illness, constitutional sleep-wake organisation, and difficult temperaments which may cause an infant to have more difficulty achieving a healthy sleep pattern (France & Blampied, 1999). An infant's temperament is viewed in terms of activity, rhythmicity, approach/withdrawal, adaptability, intensity, mood, persistence, threshold (sensitivity) and distractibility (Weissbluth, 2003). Temperament is classified in very general terms as easy, difficult, and slow-to-warm-up. Infants with a difficult temperament are characterised as intense, high on negative mood, unadaptable, irregular, and withdrawn. An easy

temperament is classified as positive mood responses, adaptable, positive affect, regularity, and moderate expressiveness. A slow-to-warm up infant may start out withdrawn (or difficult) and over time become easier (Thomas & Chess, 1982; Gennaro, Tulman, & Fawcett, 1990). The goodness of fit between an infant's temperament and their caregiver's approach is reported as having a moderating effect and some studies report how a difficult temperament can increase risk of sub optimal caregiving if there is not a goodness of fit (Thomas & Chess, 1982; Gennaro et al., 1990).

Impact of Infant Sleep Disturbance (ISD)

ISD can affect child development in areas of physical growth, cognitive development, and emotional regulation. It is also associated with increased preschool behaviour problems (Tikotzky et al., 2010; Davis, Parker, & Montgomery, 2004). ISD can lead to stress, anxiety, exhaustion, and parental depression (Hiscock & Wake, 2001; Martin, Hiscock, Hardy, Davey, & Wake, 2007; Warren et al., 2006), decreased parenting efficacy, relationship conflict, and family breakdown (Mindell et al., 2006.). Given the dyadic relationship between an infant and their caregiver, an infant's lack of sleep can affect parental sleep and functioning just as parental lack of sleep may affect their ability to be present and facilitate their infant's development.

Evidence-Based Treatment Options

The treatment options that are well-established for ISD are based on behavioural interventions that are based on research into the contribution of behavioural influences to the development of ISD. Interventions include psychoeducation on sleep hygiene, for example, routines, understanding typical infant sleep development through to the use of unmodified extinction and variations of it. The interventions are designed with the goal of the infant learning to self-soothe

and achieve sleep. This is relevant both at sleep onset and through the night in order to reinitiate sleep without the involvement of a parent.

Psychoeducation on sleep hygiene.

Sleep hygiene describes modifiable practices of a parent and child that promotes better sleep quality, allows for enough sleep and decreases daytime sleepiness (Mindell, Meltzer, Carskadon & Chervin, 2009). It includes aspects such as predictable sleep and wake times and the use of appropriate pre-sleep associations, such as reading. Mindell et al. (2009) investigated five sleep hygiene practices, including bedtime routine, lateness of bed time, whether placed in crib asleep or awake, parental presence, and reading to the infant at bedtime. They found the later the infant was put to bed the longer the sleep onset and the reduced total amount of sleep. Parental presence was associated with night waking, infants being placed in the crib asleep was associated with more night wakings and less sleep in total.

Extinction.

Extinction (unmodified systematic ignoring) involves temporarily placing the infant in the cot after a quiet and loving bedtime routine and not re-engaging with them (unless there is illness or danger) until morning. This continues until a new sleep pattern is consolidated at which point that parent returns to attending the cot, briefly, on the infant awakening. Although this method of intervention is effective, because it removes parent's attention as a reinforcer, parents can find it stressful and distressing when the infant resists falling asleep on their own on the first few nights of the programme (France, Blampied, & Henderson, 2003). Other parents, however, have reported not finding it stressful in actuality (Lawton, France, and Blampied, 1991). Parents may doubt this method and if they are not supported adequately by a professional, or if they feel that

they are not using the technique correctly, then this may cause more confusion and stress to themselves and their infant. Parents who use this method need to be aware of the post extinction response burst (PERB) (Lerman & Iwata, 1995; France & Blampied, 1999). PERBs are a brief intensification in frequency, duration, and intensity of a behaviour. In the example of a behavioural intervention for sleep using extinction, an infant may increase the intensity of their protest owing to the removal of the parental attention.

Treatment acceptability is a key aspect in treatment success. Kazdin (2001, p. 400) writes “the techniques that can be used to alter behaviour must consider people’s opinions about what is appropriate and reasonable. It may be of little use to develop effective treatments if the procedures are highly objectionable to the people who need them (e.g. parents, teachers, clients) or to the people for whom they will be used (e.g. children, patients)”. And he continues to further write “professional and client views of the acceptability contribute to multiple aspects of treatment use and adherence” (Kazdin, 2001, p.401).

A concept utilised to aid acceptability is the least-restrictive-alternative. The least-restrictive-alternative implies that the least aversive yet still effective intervention is to be used. The doctrine states “the-least-restrictive procedure is to be used to achieve therapeutic change” (Kazdin, 2001, p. 416). To understand the influences that maintain a behaviour, ideally a functional assessment is conducted and an appropriate intervention is the result. Kazdin (2001, p. 418) suggests “restrictiveness might be measured by evaluating acceptability of treatment by consumers of treatment and the amount and speed of change that is likely to be produced”.

Modified extinction.

Less restrictive alternatives have been developed in an attempt to lessen the PERB and parental anxiety around using behavioural intervention. Modified systematic ignoring includes graduated extinction. Graduated extinction involves a parent increasing the amount of time between responding to their infant's night-time crying or to decreasing the amount of time interacting with their infant when settling either at sleep onset or during night waking (France et al., 2003). A minimal checking procedure that allows parents to re-settle the sleeping position of their infant while not responding in a stimulating manner is another form of modification of scheduled ignoring. The time frames between checking are often dependent on the child's age (Mindell et al., 2006, p. 1,266). Graduated extinction is sometimes referred to as controlled crying.

Parental presence.

Parental presence is based on attachment, as well as social learning theory (Sadeh, 1994). For the first 7-10 days of the programme the parent remains in the room with the infant whenever the infant is awake, so the infant knows they are there; however, the parent does not interact with the child, thus breaking the reinforcing contingency between the infant's sleep disruptive behaviour and parent attention. The parent may lie on a separate bed or even the floor and feign sleep. The idea is for the parental presence to be phased out and it provides an attractive option for families who are worried about their infant's separation anxiety. France and Blampied (2005) suggest that the parent acts as a safety signal, downregulating infant anxiety.

Extinction with medication.

A further variation on behavioural interventions for ISD is the combination of systematic ignoring with medication. Trimeprazine tartare (trimeprazine) has been used successfully in combination with behavioural strategies of systematic ignoring (France, Blampied, & Wilkinson,

1991) and systematic ignoring with parental presence (Selim, France, Blampied, & Liberty, 2006). The intervention involves medication slowly being reduced in dose over a number of days while giving the behavioural techniques time to work. It gives both the parents and the infant time to learn the new bedtime routine without apprehension or distress and ameliorates the effects of post extinction burst. In recent years, however, such medications have not been recommended for use in children under two.

Behavioural sleep interventions have been developed for the small population of individuals and families who need help with ISD. By definition these are only conducted once the infant is over six months because ISD is not identified until that age.

Post Behavioural Intervention Effects

The positive effects of behavioural interventions include infants that become more agreeable, more likeable and more secure (France, 1992). Hiscock, Bayer, Hampton, Ukoumunne, and Wake (2008) found no evidence of adverse effects and found positive effects on the mother's relationship with the child years after treatment.

France and Blampied (2005) studied unmodified systematic ignoring and two modifications of it - systematic ignoring with minimal parental check and systematic ignoring with parental presence. All three methods led to decreases in the infant's night waking. Results showed that infants cried more and experienced more waking in the minimal checking group and that parental presence was the preferred treatment option across the groups.

Mindell et al., (2006) concluded in 17 studies using behavioural interventions for bedtime problems and night waking in infants and young children, that extinction had been effective in improving sleep onset and eliminating night waking. Fourteen studies involving graduated

extinction showed effectiveness in the reduction of night-time problems and awakenings and the four studies that involved extinction with parental presence were also found to be effective.

Overall, Mindell et al., (2006) reported that infants were more secure and predictable, were less irritable after intervention and that intervention had no effect on breastfeeding and fluid intake.

In regards to effects on parents, 12 studies collected outcome measures on parents and they reported increases in positive mental health, increased parenting efficacy, enhanced marital satisfaction, and reduced parenting stress.

Sources of Help for Parents

Information sources.

Seeking information and successful intervention for infant sleep difficulties is variable among caregivers. A survey carried out in Australia by Jackson (2011) found that parents rated the most helpful source of information on infant sleep from books (32%), followed second by the state/territory child and youth health department (15%), third, a category named *other* which included various sleep education programmes, professional advice, and The Australian Breastfeeding Association (15%) and fourth, the Internet (14%). Further sources of information fall into categories of friends, family, parent groups, and doctors.

The Internet provides a platform for some websites and parenting forums to emotively endorse what have become opposing perspectives on intervention for ISD. Bookshops and libraries are lined with literature from experts and self-described experts, who offer up their knowledge to sleep deprived parents. Ramos and Youngclarke (2006) researched a sample of this popular literature and reported that 61% endorsed controlled crying, while 31% were opposed to it and 8% took no position. This contention leads to great confusion and can lead to parents making

half-hearted attempts at intervention, possibly leading to further problems and/or further exhaustion, distress, and sense of helplessness. From a behaviourist perspective this is confusion of starting an intervention with an extinction component and then relapsing into normal routines that have a reinforcing component. This means that the parent is training resistance to extinction and making the behaviour more resistant to change.

Professional advice.

Furthering possible confusion for parents is the inconsistency of information from the professional sources they seek out. Caregivers, especially first time parents, may be involved with numerous professions and agencies both within their local area (lead maternity carers, midwives, doctors, Plunket nurses, or other well childcare providers, lactation consultants, Playcentre, Parents Centre, parenting groups run by medical centres, among many others) and at a national level (Plunket National Help Line, La Leche League website, College of Midwives website, Parents Centre website).

National organisations often promulgate an agency-wide policy that advises parents for, or against, behavioural sleep interventions: Australian Association of Infant Mental Health, (2013); La Leche League International, (Boyd, 1999); Australian Breastfeeding Association, (2012). The Australian government funded website www.raisingchildren.net.au (Raising Children Network, n.d.) promotes sleep interventions while the UK government funded website www.isisonline.org.uk (Infant Sleep Information Source, n. d.-a) does not. This can leave parents confused when seeking advice from different agencies with conflicting policies. Some agencies do not have a stance (for example, Plunket, NZ), leaving the advice given up to the discretion of the professional. This can lead to parents receiving conflicting advice from the same agency.

Many of the questions which emerge from the review of parenting sources information will not be new to practitioners or parents, however, the benefit of this thesis is teasing out what is behind the statements and then answering the questions

The Current Study

Rationale.

Infant Sleep Disturbance has detrimental effects on both infant and caregiver. Although there are evidence-based interventions for ISD many caregivers seek knowledge from a variety of resources including media, books, and family members that give vast, confusing, and conflicting advice.

Research objective.

The aim of the current thesis is three fold. The first is to investigate the information given by 23 popular parenting books and 17 popular parenting websites in 2014 that portray contrasting, and often conflicting views, on ISD, and interventions for it. The second aim is to investigate the evidence base for the conflicting views. The third aim is to reconcile various views in the light of the findings which support, or not, the contentions being made, and the use of theory which informs them.

In Chapter Two, parenting resources from popular media are discussed to provide a comprehensive examination as to what parents are reading within the sources. This information is organised into the most documented categories and then quotations from these sources are reported to convey what is being articulated about the themes and questions posed. Chapter Three addresses the questions that arise from Chapter Two, using research cited by the parenting resources as well as current literature reviews of research pertaining to the categories. Chapter

Four presents a discussion on the conclusions of the study as well as its limitations and suggestions for further research.

Chapter Two

The raw material for analysis in this thesis came from written material found in books and on websites. It was then analysed using a conventional content analysis approach, which is described by Hsieh and Shannon (2005, p.1278) as “the subjective interpretation of the content of text data through the systematic classification process of coding and identifying theme or patterns”. The use of content analysis has grown in health studies over recent years in part because of its flexibility for analysing text data. Three approaches, rather than a single method, can be applied namely: *conventional*, *directed*, and *summative* (Hsieh & Shannon, 2005). The current chapter uses a conventional application of content analysis. When using *conventional content analysis* researchers avoid having preconceived categories instead let the text/data inform what themes/categories will be included. The data is read word for word and coded, codes are sorted into categories, or are sorted into meaningful clusters.

This approach allowed me to condense extensive and diverse raw text data into a succinct summary format. Firstly, data sources were collected from popular parenting books and websites. Secondly, categories were coded that emerged from these sources and were related to the research question, which is, what are the distinctive perspectives on the wisdom of behavioural sleep interventions with ISD, within popular culture? These categories were analysed for their stance on the more provocative topics and were also analysed for research that these resources cited to support their stance. Again most of these categories will not surprise practitioners working with parents nor surprise parents themselves. The justification for having emerging categories is to collect data on accurate and specific information presented by the parenting resources and the rationalisation behind the advice.

Source Selection

At the beginning of January, 2014, a systematic search of parenting books was carried out using the terms *infant sleep*, *baby sleep*, *infant sleep strategies*, and *how to get my baby to sleep* in order to find the popular books available to parents. These terms were chosen because of their relevance to the topic and because they are colloquial rather than academic phrases, and are therefore terms that parents would likely use. Lists from Amazon books UK and USA, Fishpond, and Christchurch City Libraries were compiled and consolidated. At the same time a systematic search of parenting websites using Google was carried out using the terms *infant sleep*, *baby sleep*, and *infant sleep strategies*. Twenty-three of the most popular parenting infant sleep advice books were identified and articles posted on the top 17 websites were chosen because of their relevance to the topic of infant sleep and how to intervene with experiences with ISD. Although blogs were not specifically targeted, one blog is included because of its popularity and also because it was specifically developed to give information about behavioural sleep interventions.

Data Collection

Sources selected were thoroughly examined and information was recorded on two tables (see Appendix A and Appendix B). Appendix A is titled Parenting Resources Text and Appendix B is titled Parenting Resources Websites. Information was collected about the authors, quotations, and research cited.

Coding Data

The following codes were assigned to similar clusters of text that were emerging.

(A) Typical infant sleep development, (A1) sleep states, (A2) Temperament (B) parental perceptions/expectations, (C) maternal responsiveness, (C1) instant (C2) respectful (D) maternal mental health, (E) efficaciousness of behavioural sleep interventions, (E1) advocate (E2) oppose (E3) opposes extinction only (E4) gives information neither advocates or

opposes, (F) attachment and infant sleep, (G1) attachment transitional objects, (G2) opposes attachment transitional objects, (H) attachment parenting philosophy and infant sleep, (I) co-sleeping, (I1) advocate bed-sharing, (I2) oppose bed-sharing, (J) breastfeeding and infant sleep, (J1) helps, (J2) hinders, (K) prolonged crying and brain development, (L) crying and cortisol, (L1) separation and cortisol, (M) cortisol and behavioural sleep interventions, (N) trauma and brain development, (O) Sudden Infant Death Syndrome (SIDS), (O1) co-sleeping protects, (O2) bed-sharing protects, (P) alternative interventions for infant sleep disturbance, (Q1) Grow out, and (Q2) Persist.

A secondary coder was used to read through each data source and code the data independently of the researcher. The secondary coder was selected because she is a midwife who holds a Master of Education and who, unlike the author of this thesis, had little understanding of behavioural theory, and who is an advocate of child-led parenting. The coding procedure entailed the coder reading through each book and website article and coding each time a theme was written about.

Identifying Categories

Categories were recorded as they were identified on Table 1 and Table 2 and modified as the researcher read through the sources. This allowed the researcher to identify the categories that emerged rather than researching predetermined categories. Quotations were recorded from each resource to convey the essence of the category. The secondary coder also recorded appropriate quotations from the sources that captured the essence of the category.

Interpretation of Data

The researcher along with her primary and secondary supervisors met and worked through the categories that had emerged. Categories were kept that were relevant because of contentions for and against using behavioural sleep interventions and infant outcomes. The themes were then categorised under three superordinate categories and 10 subcategories that all three agreed upon. These categories were assessed to be the most important given the research objectives and therefore were selected because they represented the extreme ends of the differing

points of view as a way of most clearly differentiating the various, contradictory, and confusing, aspects of the sources available to parents.

Results

The three superordinate categories emerged and 10 subcategories identified were:

- Infant Factors
 - Breastfeeding and infant sleep (BF)
- Parental Factors
 - Parental responsiveness at infant sleep times (PR)
 - Infant attachment and the development of infant sleep (AS)
 - Co-sleeping and the development of infant sleep (CS)
 - Attachment parenting philosophy and infant sleep (AP)
- Interventions
 - Efficacy of behavioural sleep interventions (ESI)
 - Claims that behavioural infant sleep interventions will affect attachment (IA)
 - Claims that behavioural sleep interventions affect cortisol levels and infant brain development (CI)
 - Claims regarding alternative interventions for infant sleep disturbance (AI)
 - Claims infants will grow out of Infant Sleep Disturbance (ISD) without intervention (DP)

Each category is identified by initials. These initials are used in Appendix A and Appendix B to identify quotations belonging to one or more of the categories. Throughout this chapter and the

remaining chapters quotations taken from parenting resources have been italicised. This is to distinguish between quotes from parenting resources and those from academic research articles.

Theme 1: Infant Factors

The majority of resources discussed how infant sleep develops and the influence of an infant's temperament on achieving quality sleep. The sources generally agreed on these matters, but did not, however, agree upon how breastfeeding affects the development of infant sleep.

Breastfeeding and infant sleep.

Two thirds of the books, and almost half of the websites, discussed breastfeeding and infant sleep. No sources opposed breastfeeding; in fact, if a mother is able to breastfeed it is promoted as the ideal feeding method for nurturance. Some sources wrote statements such as.

A recent epidemiological study showed that approximately 720 American babies die each year from congenital or infectious diseases, or illness complications, because they were not breastfed McKenna (2007, p. 44).

One third of the books and a small number of websites discussed how breastfeeding can help infant and maternal sleep. Breastfeeding was discussed by attachment parenting advocates as being more accessible when mother and infant co-slept. Bialik (2012, p. 99) wrote “*so for me, co-sleeping facilitated what turned out to be one of my best parenting tools: nursing*”. McKenna (2007, p. 42) writes

For breastfeeding mothers, co-sleeping can ease interruptions caused by night-time feedings” and “*mothers who bed-share often report they hardly need to awaken*

when the baby is hungry or that they need only awaken for a few minutes to get the baby latched on.

One author of an Internet article claims “*breastfeeding moms may wake more often, but report greater total sleep*” (Cassels et al., n.d, para. 8).

Some sources claim breast milk advances sleep onset. Sears, W., Sears, R., & Sears M. (2005, p.141) write “*researchers have discovered a sleep-inducing protein in mother’s milk. So, night feeding helps both the baby and the mummy sleep*”. An article by Narvaez, (2013, para.3) on [www.psychology today.com](http://www.psychologytoday.com) states

Be assured that breastfeeding is a natural way to help children sleep and provide important support for their growth. Parents should know that breast milk in the evening contains more tryptophan (a sleep-inducing amino acid) ... it may be especially important for children to have evening or night breast milk because it has tryptophan in it, for reasons beyond getting them to sleep

Most sources agree that breastfed infants wake more than bottle-fed infants and many claim that this night waking is normal development. Gordon and Goodavage (2002, p. 75) write

These children can wake up more frequently to nurse than their cribbed, bottle-fed friends, but it’s usually little trouble for mom or baby. This is actually a more natural-and even healthier-situation than the sleep-through-the-night infants have at this age.

McKenna (2007, p. 43) claims

Night-time research shows that the average breastfeeding interval of routinely bed-sharing mothers is close to an hour and a half, or the length of the human sleep cycle.

(Narvaez, 2013a, para.6, writes “*Study after study shows that breastfed babies wake up more often than bottle fed babies (ergo, night waking is arguably normal in breastfed babies)*”).

Almost half of the books and over one third of the websites discuss how breastfeeding can hinder infant sleep patterns. Mindell (2005, p. 7) writes

Breast-fed babies are more likely to fall into the habit of nursing to sleep, and needing to be nursed back to sleep when they naturally awaken during the night. They are also more likely to take longer to sleep through the night.

Sears et al. (2005, p. 140) write “*formula-fed babies tend to wake up less often than breastfed babies. Formula is digested more slowly than breast milk, so tiny tummies stay full longer*”.

An article on www.isissonline.org.uk states

As babies grow they are able to last slightly longer between feeds. However, human milk is quickly digested, and babies commonly need to feed frequently throughout the day and nighttime (Infant Sleep Information Source, 2013, para.5)

Weissbluth (2003, p. 77) writes

Breast-fed babies are often fed more frequently than formula-fed babies, but it is not known whether this is caused by the breastfeeding mother responding more promptly

to her baby's quiet sounds or whether breast milk digestion causes the baby to wake more often.

Sears et al. (2005, p. 140) suggest breast milk itself may not be the issue and notes

We suspect bottles and formula are not as strong a motivation for waking up as the breast and mother's milk".

Cooke (2010, p. 136) writes that

Some babies, especially ones who sleep with their mum, can train themselves to take little bits of milk, often, at the all-night milk bar lying next to them, which means that instead of feeding every few hours, the mum has to wake up every hour or so for snack time.

Many sources give tips on how to increase sleep, especially for breastfeeding mothers, Cooke (2010, p.137) suggests *"If you have a partner, get them to do half, or some, of the night feeds (using expressed breast milk or formula)"*.

Under the heading "Love nursing, but ready to sleep longer", Karp (2012, p. 175) suggests *"after four months, you can start reducing nighttime nursing, yet continue daytime nursing"*.

Sleep training, while maintaining breastfeeding, was a polarising topic. There is a debate between these two issues. (Narvaez, 2013a, para.8) on www.psychologytoday.com writes

Sleep experts typically don't like to talk about breastfeeding at length because they can't be seen to be anti-breastfeeding. But their focus/obsession is that babies simply have to sleep through the night.

In contrast De Jeu (2013, para. 4) on www.babysleepsite.com writes

Develop a plan that will help you protect your breastfeeding relationship while achieving better sleep for you and your baby”. And “you don’t have to forsake sleep in order to breastfeed well, but you also don’t have to forsake breastfeeding in order to get some sleep! You can breastfeed and teach your baby to sleep through the night. You can breastfeed and help your baby learn to nap soundly

This same author writes that

Babies (5-9 months) sleep through the night when they achieve 6-8 hours of continuous nighttime sleep. Many breastfeeding mothers can go one 6-8 hour stretch per 24 hours (at 5-9 months) between breastfeedings without causing a drop in milk supply (De Jeu, 2013, para.6)

Ferber (2013, p. 136) suggests that “Perhaps surprisingly, night time feeds are a frequent, if easy to miss, cause of major sleep disturbances” and states “It is not necessary to wean your child in order to break the association of feeding with falling asleep” (Ferber, 2013, p. 85).

Questions that emerge from the category include:

Can breastfeeding affect infant sleep development? Could a behavioural sleep intervention affect breastfeeding?

Theme Two: Parental Factors and Infant Sleep

The majority of sources agreed on the importance of realistic parental perceptions and expectations around infant sleep. Areas of confusion included parental responsiveness during

sleep times, attachment and infant sleep, co-sleeping and attachment, and the attachment parenting philosophy.

A: Parental responsiveness at sleep times.

One position advocates for a mother to respond immediately to her infant at night-time and this was advocated in almost one third of the books and just over one third of the websites. The contrasting position advocates that mothers respond to their infant in different ways at different times. Hubbard and van Ijzendoorn (1991) coined the term *differential responding* meaning waiting, reading the baby's signs, and not interfering at night-time when it is not necessary. This point of view was advocated in half of the books and almost a quarter of the websites. Advocates for instant responding at night-time write "*your baby will benefit from an almost immediate response to his or her needs*" (McKenna, 2007, p. 38). Rhatigan (2005, p. 32) states "*attending to your baby's cry promptly allows you to observe the signals that may indicate what it is that he needs*". An article on www.attachmentparenting.org website cites "*being present and attending to infants when they wake and cry can help infants return to sleep more quickly*" (Ockwell-Smith et al., 2013, para.5). Attachment Parenting International, (n.d., para.11) on their website reports that "*babies cannot be expected to self-soothe, they need calm, loving, empathetic parents to help them learn to regulate their emotions*".

Other websites warn about what they propose are possible consequences of not responding promptly (Garrod, 2007, para.6) on www.bawlingbabies.co.nz states,

infants are more likely to develop secure attachments when their distress is responded to promptly, consistently and appropriately" and "*there is no doubt*

that repeated lack of responsiveness to baby's cries - even for only five minutes at a time - is potentially damaging to the baby's mental health.

On their website Centre for Attachment (2006b, para.6) writes "*the main difference between stress that is tolerable to a baby and stress that is toxic is the presence of a sensitive and responsive caregiver to help deal with that stress*"

Advocates for instant responding have commented on differential responding sources, for example, noting

The books often claim they'll help you learn to respect your baby's needs and rhythms, but they then turn right around and teach you how to disrespect and ignore your little baby as he does his best to communicate his needs for closeness and food (Gordon & Goodavage, 2002, p. 95).

Advocates for differential responding write

She could be squirming, startling, fussing, or even crying - and still be asleep. Don't make the mistake of trying to comfort her during these moments; you'll only awaken her further and delay her going back to sleep (Ezzo & Bucknam, 2006, p. 146).

And "*if he is given immediate attention when he stirs throughout his sleep he will not be able to develop the ability to re-settle himself after waking during his natural sleep cycles*" (Scott-Wright, 2010, p. 14). On the www.parentingscience.com website Dewar, (2008b, para.14) writes "*babies sometimes make noises ... and may even cry out ... when they are still asleep or only*

partially aroused. If you jump too soon, you might actually find yourself waking a sleeping baby”.

Scott-Wright (2010, p. 95) writes “*when he stirs during the night, try to sit back for a few minutes and see whether he is going to re-settle himself before you rush to tend to him*”. Others propose that because each individual and family is different, a parent may decide depending on the situation. Sears et al. (2005, p. 27) advise to “*try both the quick and the delayed response ... this is a waking-by-waking decision. It helps to remember that not all noises that sleeping babies make are cries for help*”.

Question that emerges from this category:

How do parental factors promote infant sleep development?

B: Infant attachment and development of sleep.

Almost half of the books and a third of the websites discuss attachment, infant sleep, and the effect behavioural sleep interventions have on attachment security. There is a division between those who advocate that bonding and forming a secure attachment continues when infants are falling asleep and those that do not. Weissbluth (2003, p. xx) writes that

There has been much misunderstanding about “insecurity” and “crying to sleep” because of a failure to make the distinction between (1) the importance of sleeping well when we are in a biological sleep mode and (2) the importance of security of attachment when we are in a biological awake mode.

In contrast, other sources claim “*this process - attachment is a behavioural system that operates twenty-four hours a day, even when your baby is asleep, which could be (with luck) up to 60 per cent of the time*” (McKay, 2006, p.4). Another website advises

Every time babies fall asleep they are faced with the job of temporarily being out of contact with the presence and security of their caregiver. For this reason, going to sleep is often an experience of separation that can produce stress and anxiety if not handled sensitively (Centre for Attachment, 2006a, para.7).

One of the disputes evident in the attachment debate is the argument between those who believe in fostering independence in their infants and those who believe independence comes from allowing their infants to be as dependent as they need until the infant decides to take steps to independence. Examples of this are the *family bed*, where one, or both, parents share a bed with their children on a nightly basis and *child-led feeding*, where parents are guided by their infant’s signals to commence feeding. Sears et al. (2005, p. 12) proposes attachment-based sleep associations such as rocking and snuggling for sleep onset, create a “*closer bond between parent and baby*”. And goes on to claim independence-based sleep associations, classified as Cry-It-Out methods (also referred to as CIO but written in full here for simplicity) “*don’t teach baby to fall asleep, you force him too*”.

Question that emerges from this category:

Can an infant’s attachment affect their development of sleep and vice versa? Quotations about sleep interventions affecting attachment are found below in the third theme: Interventions.

C: Co-sleeping and attachment.

Co-sleeping was discussed in half of the books and just over a quarter of the websites. Co-sleeping in the form of room-sharing is in general advocated up until 6 months although there are a select few who disagree with co-sleeping in the form of room-sharing altogether. The majority of the controversy, however, emerges between sources that promote bed-sharing as a recommended form of co-sleeping and those who oppose it. Those that oppose co-sleeping as any form of room-sharing claim they *“believe it’s crucial to teach a child to sleep in his own bed, be it crib or cot, and encourage him to go to sleep on his own from Day One”* (Hogg & Blau, 2009, p. 49). Scott-Wright (2010, p. 76) says *“my suggestion is to put your baby in his own room within the first few weeks, or as soon as you feel comfortable doing so”*.

Opposition to bed-sharing.

Bed-sharing is opposed for many reasons. The main three reasons are: the family gets less sleep, safety concerns around bed-sharing, and the effect it is claimed to have on the parents’ relationship. Ezzo and Bucknam (2006 p. 58) write *“the most serious sleep problems we’ve encountered are associated with parents who sleep with their babies”*. Henderson (2010, p. 31) writes about the difficulties of bed-sharing that *“many children who are light sleepers sleep less well if bed-sharing”*. Ryan (2009, p. 45) writes *“I am not a huge fan of co-sleeping because it is not really safe, and also it is not especially restful for anyone - baby or parents”*. Rosemond (2012, p. 134) states that *“over the years, I’ve counselled many parents who regretted ever embracing the family bed”*. Rosemond (2012, p. 135) also says that *“family bed proponents claim it assists with bonding and attachment and other such nonsense, but no study by an impartial party has found any lasting benefit to it”*.

Cooke (2010, p. 135) points out regarding bed-sharing *“for many years this has been advocated as part of the ‘attachment-parenting’ philosophy. Unfortunately, new evidence has shown that this is not the safest choice for your baby”*. Ezzo and Bucknam (2006, p. 221) simply write *“the family bed is unsafe”*. And Leach (2003, p. 183) concludes *“is co-sleeping dangerous or not? We know there are lots of other pros and cons but all we’re concerned with right now is the safety issue and we can’t get a simple answer”*. The major safety concern arises because of the known association between bed-sharing and SIDS, especially in parents who smoke and drink (Mitchell & Thompson, 1995; Carpenter et al., 2013)

One of the leading arguments against bed-sharing is the effect it has on the parents’ relationship. This is especially topical for sleep deprived parents who need each other for support. Ezzo and Bucknam (2006, p. 58) write *“not only do children encounter long term sleep disruptions, but frequently the husband removes himself from the bed so he can get a good night’s sleep”*. Rosemond (2012, p. 155) writes *“the couple who sleeps together, without children in between them, is the couple most likely to stay together”*. Bialik (2012, p. 102), an attachment parent advocate, writes about her decision to bed-share *“I assume that if we had our bed to ourselves, we would have more sex. But a lot of couples I talk to who parent this way have less sex than they did before anyway, and that’s okay”*. Karp (2012, p. 49) discussing research carried out by Baddock and colleagues, (2006 & 2007), found *“that bed-sharing babies fed 3.7 times more often during the night, and that a quarter of the dads ended up moving out of the ‘family bed’”*.

Advocates of bed-sharing.

Almost half of the books and a third of the websites advocate bed-sharing. Most sources that advocate bed-sharing list the risks and recommend not to do so *“as long as no-one in the house*

smokes, or the parents are likely to sleep so deeply - because they have been consuming alcohol, are on medication, or are simply exhausted” (Sunderland, 2006, p. 72). A website article states”

Bed-sharing (while the American Academy of Pediatrics currently recommends against it) not only increases sleep time both for mothers and babies, but has the effect of increasing the chances that mothers will breastfeed for a greater number of months than if they place their infant elsewhere (Ockwell-Smith et al., 2013, para.21).

Some advocate for bed-sharing because they believe it promotes healthy development. For example, Gordon and Goodavage (2002, p. 23) write

children who never slept in their parents’ beds were harder to control, less happy, had more tantrums, handled stress less well, and were more fearful than routinely co-sleeping children.

Sunderland (2006, p.70) proposes

Skin-to-skin contact throughout the night has been shown to regulate a baby’s immature body and brain systems, and can play a key role in maintaining his long-term mental and physical wellbeing.

And adds “*some studies show that children who have never slept in their parents’ bed are harder to control” (Sunderland, 2006, p.72). An article on www.isisonline.org.uk states*

Expecting a human baby to sleep alone, and for prolonged periods, is unrealistic and can be harmful. The mismatch in what today’s parents might expect or desire

regarding infant sleep, and their baby's biological abilities regarding sleep, can lead to some unnecessary conflicts (Infant Sleep Information Source, n.d.-c, para.2).

McKenna (2007, p. 38) writes about cortisol *"babies who co-sleep are much less likely to cry themselves to sleep, or even cry at all, and so avoid releasing an excess of this hormone"*.

Other sources promote co-sleeping as a tool for enhancing attachment. For example an article on www.isis.org.uk includes,

The closeness of mother and baby is promoted by a link that binds them together - the bond of attachment - and some researchers propose that this bond is maintained by mothers and babies 'creating; and responding to 'cues; crying, visual contact, touch' (Infant Sleep Information Source, n.d.-a).

McKenna (2007, p. 47) writes that co-sleeping promotes *"enhanced attachment and parental fulfilment - especially for working mothers, increases time with baby during the night, enhances attachment and helps the mother to feel fulfilled as a parent"*.

Some sources advocated for parents bed-sharing as it was enjoyable for them

Knowing that my babies were right next to me at night allowed me to rest knowing that I could tell if they were too hot, too cold, not breathing right -whatever. I felt safe next to them, and I knew they were safe next to me (Bialik, 2012, p. 99).

An article on the www.ahaparenting.com website states *"advocates of the Family Bed, say that infants are hard-wired to sleep with their mothers, and nurse at night, for many months, probably until toddlerhood ... my personal experience is that the family bed is heavenly"* (Markham, 2014b, para.3).

While many claims were made within the popular media sources that co-sleeping, particularly bed-sharing, enhanced attachment, no research was directly cited.

Questions that emerge from this category include:

Do solitary sleeping infants sleep better than bed-sharing infants? Are outcomes more favourable for those infants who bed-share compared to infants who do not?

D: The attachment parenting philosophy and infant sleep.

Four of the books and a third of the websites reviewed classified themselves as being based on a self-described attachment parenting philosophy. Many claim that parenting in an attachment parenting way produces a healthy adult. For example, Folden-Palmer, (1999, para.1) on www.bawlingbabies.co.nz claims

according to attachment researchers, the consequences of this parenting style are fewer behaviour problems and mental disorders, less social misconduct, a greater ability to form lasting adult relationships, and improved overall health.

An article on www.evolutionaryparenting.com notes that

Jude Cassidy from Pennsylvanian State University reviewed research between attachment parenting and emotion regulation and found that infants who have parents who engage in practices that promote secure attachment, particularly responsiveness to distress, have children who demonstrate better emotion regulation than those who show insecure attachment (Cassessls, n.d.-c, para.10).

The attachment parenting proponents argue that “*children who are securely attached, who bed-share, who are worn in slings, tend to be as, if not more, independent than their counterparts*” (Cassels, n.d.-a, para.14).

Question that emerge from this category include:

Do attachment parenting practices produce better outcomes for children?

Theme Three: Interventions

All of the sources surveyed wrote about strategies for intervening with infant sleep difficulties. The most contentious themes regarding intervention were claims about the effectiveness of behavioural sleep interventions, claims that sleep interventions will affect attachment, claims about the effect sleep interventions have on cortisol levels and brain development, claims regarding the efficacy of alternative interventions, and claims that infants will grow out of sleep disturbance without intervention.

A: Efficacy of behavioural sleep interventions.

Many of the books and websites agree that behavioural sleep interventions work even if they do not agree whether parents should use them. When discussing behavioural sleep interventions many of them refer to *Cry-it-Out*. A third of the books and over half of the websites agree that behavioural sleep interventions work. “*The literature published since 1970 (Mindell et al. 2006; ISIS (unpublished, 2012) provides considerable evidence that sleep training, in general seems to work*” (Infant Sleep Information Source, n.d.-b, para.1).

Sears et al. (2005p. 208) write

We are going to be honest with you. The cry-it-out method appears to work - at least some of the time, in some families. Many parents have tried it, and some babies have learned to go to sleep on their own fairly quickly.

In contrast, Weissbluth (2003, p. 213) writes

Research has shown this method to work well over a period of four to nine nights. Again, your success depends on your child's tendency to fuss and cry, how well rested or overtired he is, and how consistent you are.

And Mindell (2005, p. 99) writes

Many studies have been conducted supporting the efficacy of the sleep-training method outlined below. This method, formerly referred to as "graduated extinction" in the medical and psychological literature, has been delineated as well established according to evidence-based guidelines.

Although most sources agree that behavioural interventions work, some question what the definition of success is. McKay (2006, p. 30) argues

In the small number of studies undertaken, while most babies will indeed stop waking when they are left to cry "success" varies from an extra hours sleep each night to little difference between babies who underwent sleep training and those who didn't, eight weeks later.

Sunderland (2006, p. 78) writes *"the technique is effective from the parent's point of view, but it can never be considered as a worthwhile achievement"*.

Gordon and Goodavage (2002, pp. 94-95) write

In the end, the baby often does begin to sleep through the night via these cry-it-out techniques, it could take minutes or hours over several days or weeks-sometimes even months ... we don't like cry-it-out, but in fairness, they can be helpful to parents who are at their wits end who aren't willing to try the family bed, or who have one too many kids awake at night.

Some sources arguing against using behavioural sleep interventions often confess they may not be as harmful as they are professing. For example, Narvaez (2013a, para.14) on [www.psychology today.com](http://www.psychologytoday.com) states

Controlled crying should never be presented as the default, best or only option. But it is difficult to say that it should never, ever be an option that might be right for certain parents (based on consideration of a number of factors).

Another website www.ahaparenting.com writes

I should also acknowledge that I know many kids who were Ferbered (controlled crying) as babies by their parents, who shall remain nameless because they are dear friends of mine. These kids all seem fine to me (Markham, 2014a, para.21).

Others question the research behind the support for the efficacy of behavioural sleep interventions. For example on www.evolutionaryparenting.com writes

Once again I find myself having to take apart research that has managed to make the rounds that is being held up as proposing that crying-it-out is good for babies. That

they need it to learn how to sleep. That they need to be left alone to learn how to self-settle. And it's sickening (Cassels, n.d.-b, para.1).

Articles on www.evolutionaryparenting.com also challenge research carried out by Price, Wake, Okoumunne and Hiscock, (2012) where the research concludes

The authors did not provide evidence that there were no long-term effects. In fact, given the use of intention-to-treat for a treatment that had a 58% agreement rate and randomized allotment, the authors can make very few conclusions at all (Cassels, n.d.-e, para.18).

Research carried out by France and colleagues is criticised, *“what is the problem with this research? Largely the method of assessing ‘self-soothing’ is simply the extinction of crying”*. Furthermore the website states when addressing the evidence that two reviews have on the effectiveness of behavioural sleep interventions an article on www.evolutionaryparenting.com state *“I see none of this providing much evidence of anything, except that sleep training helps parents”* (Cassels, n.d.-c, para.4).

This same website goes on to state *“the only bit of research we have on that comes from Dr Middlemiss and colleagues that found sleep training disrupted maternal-infant synchrony, at least temporarily”* And *“However, as found in the research, sleep training rarely fixes the problem long-term and this is something we must be aware of”* (Cassels, n.d.-d, para.6).

Advocates for behavioural sleep interventions.

A third of the books and none of the websites reviewed advocated for behavioural sleep interventions. Some books, as a whole, advocate for sleep interventions. These include Mindell (2005), Henderson (2010) and Ferber (2013). Ezzo and Bucknam, (2006, p. 131) add

your baby will not lose brain cells, experience a drop in IQ, or have feeling of rejection that will leave him manic-depressive at age thirty. You do not undo all the love and care of the waking hours with a few minutes of crying.

Scott-Wright (2010, p. 106) writes “*the sleep-training and routine go hand in hand to create a happy child. It gives them security and makes them less tired*”. De Jeu (2012, para.6) on The Baby Sleep Site declares “*we use cry-it-out to mean a sleep training method that is used to change sleep associations and to help parents set limits as to what they will and will not ‘do’ in the name of sleep*”. And on goes on to report “*Some parents reject cry-it-out due to fear or misconceptions.....remember, there are lots of stages in between rocking your baby all night long and letting her wail for hours*” (De Jeu, 2012, para.9). Reporting on extinction with parental presence, Dewar (2008c, para.22), on www.parentingscience.com states, “*when this method of infant sleep training was tried on sleep disturbed infants aged 6-23 months, infants slept longer and experienced fewer night wakings*”.

Opponents of behavioural sleep interventions.

One quarter of the books and almost a quarter of the websites oppose behavioural sleep interventions. McKay (2006, pp. 26-27) opposes behavioural sleep interventions and cites the Australian Association Infant Mental Health Incorporated (AAIMHI).

there have been no studies, such as sleep laboratory studies, to our knowledge, that assess the physiological stress levels of infants who undergo controlled crying, or its emotional or psychological impact on the developing child.

McKay (2006, p. 32) continues to write

controlled crying and other similar regimes may indeed work to produce a self-soothing, solitary sleeping infant. However, the trade-off could be an anxious, clingy or hyper-vigilant child or even worse, a child whose trust is broken.

And

It is the very principle that makes controlled crying “work” that is of greatest concern: when controlled crying “succeeds” in teaching a baby to fall asleep alone, it is due to a process that neurobiologist Bruce Perry calls the “defeat response” (McKay, 2006, p. 33).

Cox (n.d., para.1) is cited on www.bawlingbabies.co.nz as suggesting,

I believe the semantics of whether it is controlled crying or comforting means nothing and the overriding impact is of dominance and restraint - a dominant attitude by the parent of “you will do what I say” and a restraint from nurturing -an “I mustn’t let you get too close to me because I will no longer be in control” attitude.

www.kellymom.com website article writes “in my opinion, this ‘sleep training’: often creates an unhealthy attitude about sleep: after going through this training, baby tends to view sleep as a fearful state to enter into and to remain in” (Kellymom, 2011a, para.11). Many propose detrimental effects of sleep training. For example, Attachment Parenting International, (n.d.,

para.13) writes “*sleep training can have detrimental physiological and psychological effects*”.

McKay (2006, p. 26) states

“although many baby sleep trainers claim there is no evidence of harm from practices such as controlled crying, it is worth noting that there is a vast difference between ‘no evidence of harm’ and ‘evidence of harm’ ”.

Opposition to extinction only methods.

A fifth of the books and almost half of the websites oppose the use of the so-called extinction only CIO method. Sears et al. (2005, pp. 199-213) dedicate a great deal of Chapter 10, titled *Should Baby Cry It Out?* to opposing extinction or Cry-It-Out. The headings included in the chapter include “*How crying it out sabotages the parent-child relationship - CIO weakens communication between parents and baby - CIO is biologically incorrect - CIO leads to poor quality sleep - CIO sabotages parents’ sensitivity - CIO can interfere with healthy growth - CIO is medically incorrect - CIO doesn’t work in the long run*”.

The sources that oppose behavioural sleep intervention oppose extinction the most, due to the intervention involving infants crying alone for the minutes required for behavioural extinction to occur. Prolonged infant crying is discussed below. Sunderland (2006, p. 78) argues “*if you do decide to sleep train, make sure that you don’t use a method that involves prolonged crying, even for a few nights*”. Many of the attachment parenting philosophy sources suggest that letting your baby Cry-It-Out can be: -

a lose-lose situation, both parent and baby are affected ... when you go against your biological programming, you lose confidence in your own ability to understand your

baby. Your baby loses trust in his ability to make himself understood. Because the two of you do not communicate as well, you drift apart (Sears et al., 2005, p. 207).

Many sources oppose CIO or unmodified extinction, rather than the variations of graduated extinction or parental presence.

Neither opposing nor advocating but giving information.

One fifth of the books and a tenth of the websites neither opposed nor advocated behavioural sleep interventions but give information on different types of behavioural sleep interventions and other interventions that can be carried out. These sources often talked about three different methods of infant sleep training: CIO or cold turkey, maybe cry or graduated exposure, and no-cry or pick-up/put-down or no-tears solution. And they advocate for parents choosing the right method for their individual family needs and that of their baby. For example, Weissbluth (2003, p. 103) writes “*there are many ways to help your child sleep. You should choose the solution that works best for you and your child*”.

Sources appear to agree that behavioural sleep interventions work. Some sources oppose extinction as a behavioural sleep intervention; some sources oppose all forms of behavioural sleep interventions; some sources simply share information; and other sources advocate sleep interventions. Those opposed to using behavioural sleep interventions claim they do not help the infant develop sleep habits, but rather they temporarily extinguish the infant’s crying and this has detrimental physiological and mental effects to the infant, and benefits only the parents. Those who advocate for behavioural sleep interventions include as reasons healthy sleep routines and sleep associations that scaffold the infant’s sleep behaviours, which benefits both the infant and parents.

Because sources agree in general that behavioural sleep interventions work no question emerges from this category.

B: Claims that behavioural sleep interventions will affect attachment.

Most of the attachment parenting sources oppose behavioural sleep interventions. Cooke (2010, p. 142) writes *“the people who subscribe to the attachment-parenting theory ... think that controlled crying is cruel because it teaches babies not to expect comforting on demand”*.

One source, www.babysleepsite.com, promoting sleep interventions claims *“you can even practice attachment parenting and sleep train”* (Johnson, 2013, para. 10). This is the only source that acknowledged this as a possibility and one of only a few sources that argued that breastfeeding did not need to be affected if a parent chooses to sleep train.

Many of those who oppose behavioural sleep interventions write about the need to respond sensitively to infants crying so as not to affect their attachment. For example on www.bawlingbabies.com *“the cry-it-out approach undermines the very basis of secure attachment, which requires prompt responsiveness and sensitive attunement during the first year after birth”* (Solter, 2004, para.1). On the he same website Children, Youth, and Women’s Health, (n.d., para.1).are quoted

a major need for secure attachment is for a parent to respond to infant needs and cues, it is important not to leave your baby to cry ... crying always signals a need.

Provide comfort when your baby is upset -

Sunderland (2006, p. 79) writes

Infants who have been trained not to cry can often be seen staring into space with a fixed stare. Allan Schore calls it “the black spot in going-on-being” or “conservation-withdrawal”. In attachment theory, when a child starts to bottle up his feelings rather than express them, the process is known as PROTEST-DESPAIR-DETACHMENT.

One source states *“these methods, which rely upon babies to ‘self-soothe’ in order to fall asleep and stay asleep, are risky and potentially harmful to babies as well as to the bonding process between baby and caregiver”* (Centre for Attachment, 2006, para.8). Further in the same article there is the claim

Sleep training poses a further threat to the attachment relationship by effectively training caregivers to desensitise themselves to their baby’s cues. It is not only the baby who is at immediate risk from them, but the caregiving system as well (Centre for Attachment, 2006a, para.15).

And then, the same source states

If you have experimented with some of these sleep training techniques and would like to pursue a more secure connection with your child, there are things you can do. It is never too late to repair your relationship (Centre for Attachment, 2006a, para.18).

Some sources report that undergoing a behavioural sleep intervention will not affect attachment.

Mindell (2005, p. 154) writes *“studies have actually found that young children are more securely attached to their parents following sleep training”*.

Question that emerges from this category:

Can a behavioural sleep intervention affect attachment?

C: Claims behavioural sleep interventions affect cortisol levels and infant brain development.

By far the largest volume written on perceived negative consequences of behavioural sleep interventions was written on the blog www.bawlingbabies.blogspot.co.nz. Porter (2003, para.7) writes “*perhaps most important, behaviour-based techniques of child raising, such as sleep training, must be shunned*”. And continues to propose:

The new body of sophisticated, cross-discipline research on attachment and brain development outlined in this article, it is clear that a baby’s willingness to accept sleep training after reportedly brief periods of protest is no less than a cycle of hyperarousal and dissociation responses that is damaging to development

On the same blog Solter, (2004, para.2) states “*there is no doubt that repeated lack of responsiveness to a baby’s cries, even for only five minutes at a time, is potentially damaging to the baby’s mental health*”.

Articles in other parenting resources state

When controlled crying succeeds in teaching a baby to fall asleep alone, it is due to a process that neurobiologist Bruce Perry calls the “defeat response”. Babies eventually abandon their crying as the nervous system shuts down the emotional pain and the striving to reach out (McKay, 2006, p. 33).

Another source writes

When sleep is entered into in this fashion, it is not peaceful sleep earned by a process of self-soothing, nor has the baby finally grasped self-settling skills. This is instead the second phase of the stress response ... entered a stage of dissociation. When our bodies are too flooded with stress they have to shut down (Centre for Attachment, 2006a, para.13).

Sources opposing behavioural sleep interventions write about increased cortisol production as a consequence of crying during sleep intervention.

Cortisol (a hormone secreted during stressful situations, such as crying it out)... makes you more prone to the bad effects of future stress, it makes you more prone to mental illness and makes it hard to recover from stress (Gordon & Goodavage, 2002, p. 97).

Markham (2014a, para.8) on www.ahaparenting.com writes “*There are many studies claiming that repeatedly leaving babies to cry-it-out is a risk factor that predisposes kids to permanent brain changes and mental health issues in later life*”.

Another website claims

The widespread American practice of putting babies in separate beds - even separate rooms - and not responding to their cries may lead to more incidents of post-traumatic stress and panic disorders among American adults (Commons & Miller cited in Powell, (n.d., para1), www.bawlingbabies.co.nz.

On www.infantsleep.org another warns

Infants with difficulties in self-regulation are less capable of modulating intense stress or withdrawing from overwhelming stimuli. For these infants, who display a larger cortisol response to stress, it is unknown how CIO impacts their neuropsychological development (Gordon & Hill, 2008, para.30).

Interestingly, an opposing opinion has been proposed by Weissbluth (2003, p. 114),

the resulting sleep disturbances might produce fatigue, and the body would naturally respond by turning up production of those chemicals, such as cortisol, responsible for maintaining alertness and arousal.

As noted earlier the Middlemiss, Granger, Goldberg & Nathans (2012), study is cited as a reason why parents should not use behavioural sleep interventions. Infant Sleep Information Source, (2013, para.11) writes

The response of the babies in this study lends support to the theory that babies who undergo sleep training via extinction may be learning to ‘give up’ rather than to ‘settle’--- outwardly the two behaviours appear the same, but inwardly the babies physiology is very different.

Gordon & Hill, (2008, para.27) on www.infantsleep.org.uk write “*the dissociation of observed behaviour from adrenocortical activation makes it difficult to determine the absence of physiological stress simply by observing that the infant has fallen asleep*”.

A few of the sources write about the Price et al., (2012), study. Two websites are particularly scathing (www.evolutionaryparenting.com and www.bawlingbabies.blogspot.co.nz). One writes that “*research has been torn to shreds as being anything but a ‘bunch of crap’*” (Cassels, n.d.-a,

para.1). Both the Middlemiss et al (2012) study and the Price et al (2012) study are reviewed in the next chapter.

Conclusions are drawn such as *“leaving your baby to settle herself can have long-term adverse consequences for her body and brain”* (Sunderland, 2006, p. 45). But, some of the sources admit that they do not know if there are any consequences to doing a sleep intervention with an infant. For example, Sears et al. (2005, p. 23) admit

A baby who only cries briefly for a few nights is probably fine. What about crying for many minutes, night after night? We can't say how many minutes and how many nights are safe, because no one ever has ever researched this.

Dewar (2008, para.29) on www.parentingscience.com writes *“do the intensified crying bouts - the so-called ‘extinction burst’ - associated with the Ferber method put babies at risk? No one has tested this hypothesis yet”* Some sources write about behavioural sleep interventions within a context that could cause trauma. For example, Gordon and Goodavage (2002, p. 101) write

“studies of parent-infant separation involving ‘crying’ in nonhuman primates show that the hormonal stress response of (nonhuman) babies in these situations can be ‘equivalent to or greater than that induced by physical trauma’ ”.

Another writes

when infant cries are ignored, this trauma elicits a ‘freeze’ or ‘defeat’ response. Babies eventually abandon their crying as the nervous system shuts down the emotional pain and the striving to reach out (McKay, 2006, p. 33).

Balbernie (2001, para.3) on www.bawlingbabies.co.nz states “*early traumatic experiences that affect the formation of the limbic and subcortical areas of the brain result in extreme anxiety, depression and a lack of ability to form healthy attachments*”.

Another author emotively writes on www.evolutionaryparenting.com

What is traumatic is having separation forced on you when you aren't prepared for it or even developmentally ready for it. Let me ask you, you have always been breathing your whole life, right? It is all you know. Which would be more traumatic? Someone coming up without warning and covering your airway for a period (though letting you live, of course) or choosing to hold your breath for the same period on your own? I thought so (Cassels, n.d.-a, para.16).

Question that emerges from this category:

Could a behavioural sleep intervention cause an increase in cortisol levels that will affect an infant's typical development?

D: Claims regarding alternative interventions for infant sleep disturbance.

Many alternative interventions are cited within the popular media sources. Co-sleeping was cited by many of the sources as an intervention for ISD. For example, Bialik (2012, p. 103) states “*we choose to lie with him until he falls asleep*”. Sears et al. (2005, p. 14) offer that interventions of “*feeding to sleep, rocking, wearing down in a sling....soft music, lullabies, white noise, dummy, patted, scent, massage*”. Cooke (2010, p. 140) suggests a variation of the following to

Comfort baby back to sleep - wind-down time, wrap baby firmly but not too tightly, put baby to sleep on back, dummy if you want, pat tum gently with a slow rhythm until they're sleepy, leave the room before they actually fall asleep.

McKay (2006, pp. 213-238) offers “*sleep associations- play music, special words and sounds, books or stories, massage, music, a bath, wrapping, rocking, patting, stroking, meditation*”.

Entire books are dedicated to promoting alternative interventions. These include *The Baby Steps Plan* (McKay, 2006), *Soothe your baby the natural way* (Rhatigan, 2005), *The Baby Bliss Technique* (Ryan, 2009), and *The Sensational Baby Sleep Plan* (Scott-Wright, 2010). Often these sources are less intensive versions of behavioural sleep interventions. For example, Gordon and Goodavage (2002, p. 169) write “*for these parents we offer a sleep-training technique that is kinder and gentler. It's not something we recommend, since some crying is often involved*”.

Question that emerges from this category:

Are any of the interventions proposed by the parenting resources evidence-based?

E: Claims infants will grow out of sleep disturbance without intervention.

Bialik, (2012, p. 103) writes “*for us, our son eventually learnt to sleep at night, all night*”. On www.evolutionaryparenting.com Cassels, (n.d.-b, para.20) claims “*children will sleep through the night at their own pace*”. And the same source goes on to state

What's amazing to me is that this natural course, as found by these researchers, shows that by 3 years of age, almost all children are sleeping through the night with few problems to do with night-wakings or sleep disturbance (Cassels, n.d.-b, para.17).

Another website claims

in most cases, however, children will learn to fall asleep by themselves when they are developmentally ready to do so, regardless of 'training' received. The small number of studies which have conducted long-term follow-up of behavioural interventions add support to this assertion (Infant Sleep Information Source, n.d.-a, para.11).

And another writes “*your baby will begin to comfort herself and to sleep for longer stretches at her own developmental pace*” (kellymom, 2011b, para.8).

The other side of the debate claims “*babies don't grow out of sleep problems. Studies show that most babies with sleep problems at one year of age will still have sleep problems at four years of age if nothing is done*” (Mindell, 2005, p. 116). Weissbluth (2003, p. xix) writes “*if your child does not learn to sleep well, he may become an incurable adult insomniac, chronically disabled from sleepiness and dependent on sleeping pills*”. Mindell (2005) and Weissbluth (2003) do not directly cite research, however, they claim studies show that most babies with sleep problems at one year of age will still have sleep problems at four years of age if nothing is done. Karp (2012, p. 152) suggests “*kids usually don't just outgrow their sleep struggles. These troubles typically persist until you do something to bring them, under control*”. Scott-Wright (2010, p. 22) states “*Babies are not born with negative sleep associations, they only learn and adopt the bad habits we teach them*”. Ezzo and Bucknam (2006, p. 47) suggest that “*allowing an infant to regulate his own life leads to the formulation of nighttime sleep disturbances and poor sleep habits*”. Frost (2010, p. 177) writes “*teaching him in a healthy way to soothe himself to sleep, and that's an important process for every child to learn*”.

Question that emerges from this category:

Can infants grow out of sleep disturbance without intervention?

Summary of Results

Through the in-depth search of 23 parenting infant sleep advice books and 17 sleep advice websites, three superordinate categories, and ten subordinate categories emerged as the most contradictory. As the categories emerged many contentious views became clearer. As was already acknowledged in the introduction to this thesis the information being presented to the public often comes from opposing viewpoints. By presenting quotations for these viewpoints the aim has been to highlight the confusion being presented to the parents about infant sleep.

Questions were posed at the end of each subcategory to guide the search for research into the topic. Throughout the search of the literature and media it became clear that the information presented lacked specificity on the age of infants and distinction between sleep difficulties and sleep disturbance. Moreover, there was little research cited to endorse the viewpoint taken by the authors.

The next chapter reviews research pertaining to the questions posed in response to the categories drawn out in this chapter. Current literature reviews are undertaken for each of the questions that emerged from the theme and reviews of the research that is cited by the sources is acknowledged.

Chapter Three

Rationale

The purpose of this chapter is to review evidence-based research so that I can address the questions that most commonly arose from the parenting resources identified in Chapter Two.

These questions are:

- Can breastfeeding affect sleep development?
- Could a behavioural sleep intervention affect the continuation of breastfeeding?
- How do parental factors promote infant sleep development?
- Can an infant's attachment affect their development of sleep and vice versa?
- Could a behavioural sleep intervention affect an infant's attachment?
- Do solitary sleeping infants sleep better than bed-sharing infants?
- Are positive outcomes more favourable for those infants who bed-share compared to infants who do not?
- Do attachment parenting practices produce better outcomes for infants?
- Could a behavioural sleep intervention cause an increase in cortisol levels that will affect an infant's typical development?
- Are any of the interventions proposed by the parenting resources evidence-based?
- Can infants grow out of sleep disturbance without intervention?

The procedure followed in this chapter is first to restate each question and then to present research cited in the parenting resources that pertains to each question in turn. I then review the current evidence-based research addressing, or relevant to, the question.

Analysis of the research

To begin the systematic process of documenting research cited by the parenting resources I first reread the books and website articles looking specifically for mention of evidence-based studies. Second, this research was summarised and documented in Table 1 (text resources) and Table 2 (website resources). These tables categorise the parenting resources, the authors, and their qualifications, the quotations that have been included in Chapter 2, the research that authors have included, and the relevance of the research to each topic. Research was not included in either table if it could not be reliably matched to a quotation or stance on the question taken by the parenting resource. For example, sometimes lists of references were presented at the end of a chapter with no apparent link to material contained in the parenting resource. Because each parenting resource usually addressed more than one question Table 1 (text resources) and Table 2 (website resources) summarise the reference cited by each resource, rather than around the questions themselves. Finally, the purpose and findings of the research was analysed to establish whether it was relevant or not relevant to the quotation it was matched to. Research was only considered relevant if the parenting resources had portrayed an accurate account of the study's findings.

The reliability of my assessments were then checked using the secondary coder, the same person who had been involved in the first part of the study, and she then reread and analysed the parenting resources to determine which research was cited. The second coder agreed with my identification and classification of the material, and found two additional references.

Following this investigation into research cited by the parenting resources, literature reviews were undertaken to establish what current research pertains to the questions which emerged from

the categories in Chapter Two. All literature reviews were undertaken in July 2016 and used the following databases on Education, Health Sciences and Psychology/Sociology (EBSCO) Host. These databases include PsychInfo, PsychArticles, and Academic Search Complete. A detailed description of each literature review is given for each question including a justification of why research was included or excluded. All research included was from peer reviewed journals and is described in detail, where possible, identifying the ages of the infants, measurements used, and findings that are relevant to the thesis topic. Although authors of the various reports note “significant differences” and “associations” they do not often report effect sizes. This makes it very difficult to evaluate some of the claims.

Question: Can Breastfeeding Affect Sleep Development?

Research cited by the parenting resources.

With regard to whether breastfeeding affects sleep development Ezzo and Bucknan (2006) in *On Becoming Babywise* and an article titled Studies on Normal Infant Sleep on www.kellymom.com (2011c, para 8) cite research by Elias, Nicolson, Bora, and Johnston (1986) that breastfed co-sleeping infants had less sleep overall than those weaned going into their second year. Elias, et al. (1986) collected data on 32 breastfed infants for 2 years on their 24 hour pattern of sleeping and feeding. They found that breastfed infants continued to have a short duration of sleep with frequent wakings and slept less in a 24 hour period compared to weaned infants. Other resources for and against behavioural sleep interventions and the effect on breastfeeding did not cite any relevant research.

Evidence-based research findings.

The literature review used the terms *infant sleep* and *breastfeeding*. Five hundred and fifty-eight articles were found of which 12 were relevant to the topic and accurately specified the age for the infant classification. Articles were excluded if they were based on the relationship between co-sleeping and breastfeeding, or data collected focused on maternal outcomes of breastfeeding and the effect on infant sleep.

Eight studies showed an association between breastfeeding and infant sleep difficulties (Ball, 2003; Engler, Hadash, Shehadeh & Pillar, 2012; Pinilla & Birch, 1993; Philbrook & Teti, 2016; Ramamurthy et al., 2012; Weinraub, et al., 2012; DeLeon & Karraker, 2007, Galbally, Lewis, McEgan, Scalzo, & Islam, 2013). Ball (2003) examined feeding choices of 253 mother-infant dyads and infant sleep development through maternal sleep logs and interviews when their infants were 1 month and 3 months of age. She found breastfed infants at 3 months woke more frequently than formula fed infants, for a longer duration, and that the frequency of feeding at night was longer for breastfed infants. Engler et al. (2012) researched the sleep patterns of 54 exclusively breastfed and 40 exclusively formula fed infants aged 2 - 4 months using a maternal-reported questionnaire. They found that although breastfed infants slept for slightly longer on average per night than formula fed infants, their sleep was more fragmented with more waking.

Pinilla and Birch (1993) investigated whether 26 breastfed infants were able to sleep through the night (12 a.m.-5 a.m.) during their first 8 weeks of life. The treatment group were encouraged to establish a focal feed between 10 p.m. – 12 a.m. and then to lengthen out the time of next feed by not offering the breast but doing other caring night-time parenting. Data were collected via parental-reported questionnaires and diaries. They found infants in the treatment group fed less

frequently at night but their milk intake did not differ from the control group over a 24 hour period. They conclude parents can lengthen out the bouts of sleep at night-time without having to discontinue breastfeeding. Philbrook and Teti (2016) conducted a study about bedtime parenting and sleep of 109 infants at intervals when the infants were aged 1, 3, and 6 months. Infants who were breastfed at bedtime exhibited a slower increase with age in time spent asleep at night-time compared to those who were breastfed less at bedtime.

Studies that showed more night waking and shorter sleep duration after 6 months of age in breastfed infants compared with formula fed infants or weaned infants were as follows.

Ramamurthy, et al. (2012) assessed the relationship between breastfeeding and sleeping patterns of 10,321 infants aged between 0-11 months. Caregivers completed the Brief Infant Sleep Questionnaire (BISQ) and results were published for age ranges <6 months and 6-12 months. In both age ranges breastfed infants woke more and the length of uninterrupted sleep was less than non-breastfed infants.

Weinraub, et al.(2012) collected data using a multitude of maternal-reported questionnaires for a longitudinal study of over 1,200 infants at the intervals of 6, 15, 24, and 26 months, including sleep measures. Mothers reported about breastfeeding at 6 and 15 months. The study found two patterns of sleepers, one which they identified as *sleepers* and the other as *transitional sleepers*. The authors classified *sleepers* as those who “show little evidence of elevated sleep awakenings at any point from 6 through 36 months (Weinraub et al., 2012, p.1523)”. *Transitional sleepers* were defined as those who “show early difficulties with sleep awakenings, signalling upon awakening from approximately 6 or 7 nights per week at 6 months to just under 3 nights per week at 15 months (Weinraub et al., 2012, p. 1523)”. Among other factors transitional sleepers

were more likely to be breastfeeding at 6 months and also at 15 months. They report that these findings show an association between breastfeeding and the continuation of night waking into later infancy.

DeLeon and Karraker (2007) investigated both intrinsic and extrinsic factors associated with night waking in 44 nine month olds. They reported that 67% of the 9 month old infant group, who were breastfed, woke more frequently compared with non-breastfed group, who had only 24% regularly night waking. The researchers postulate from their findings that breastfed infants find it difficult to remain asleep for longer periods compared to non-breastfed infants. They also found that infants who are put to bed asleep and co-sleep had more time spent awake during the night compared with other infants and suggest these findings show they have more difficulty returning to sleep. A large population study in Australia based on 4,507 primary caregiver reports of their infant's sleep and breastfeeding status was undertaken by Galbally, et al. (2013). They found an association between breastfeeding at 6 months and infants, who had difficulty sleeping alone and who also experienced night wakings. They did not find an association between breastfeeding and difficulties with sleep onset.

Two studies found no association between breastfeeding and sleep difficulties in the second half of the first year of life. They are as follows. Demirci, Braxter, and Chasens (2012) examined maternal-reported sleep duration in infants 6 – 11 months and reported no significant difference between those infants who were breastfed and those that were not breastfed. Brown and Harries (2015) studied 725 mother-infant dyads. Mothers reported on their feeding methods and the number of night feeds as well as infant night waking. Data were collected for each month from 6-12 months of age. No difference was found between breastfed or formula fed infants for the

whole of the 6-12 month old period. The findings also showed that although infants who received solid feeds and more milk feeds during the day still woke at night-time they were less likely to feed at night.

Two studies found that sleep difficulties present at 6 months of age in breastfed infants lessened over time. Hysing, et al. (2014) examined the trajectory of sleep duration and nocturnal awakenings in 55,831 infants at 6 months and again at 18 months. They found a higher rate of night-time waking in breastfed infants compared to formula fed infants 6 months of age, but that this lessened over time.

Mindell, Du Mond, Tanenbaum, and Gunn (2012) investigated the long-term relationship between breastfeeding and sleep in a longitudinal study of 36 exclusively breastfed infants and 56 exclusively formula fed infants between the ages of 3–12 months. The study found sleep disruptions that had been associated with breastfeeding had been resolved by the 6 month follow-up (when the infants were 9-18 months) indicated by the breastfed infants obtaining equal sleep skills to those of formula fed infants. Mindell et al. (2012) concluded this from previous research by Ramamurthy, et al. (2012), Pinilla and Birch (1993), and Sadeh et al. (2010), both state that it is parental presence at sleep onset because of breastfeeding that is likely to influence sleep development rather than the breastfeeding itself. For the best sleep outcomes they advise nursing but then encouraging the infant to fall asleep independently.

Summary of findings.

The results of the literature review on breastfeeding and infant sleep development provide studies that separate into three categories: those where breastfed infants continued to show difficulties with sleep compared with formula or weaned infants, those that found no association

between breastfeeding and sleep difficulties, and two studies that found breastfed infants with sleep difficulties at 6 months lessened over time. A key aspect proposed by many of the articles is that it is not the physical act of breastfeeding, or the quality of the milk, that interferes with typical sleep development, but rather it is the stimuli that are associated with breastfeeding. For example, having maternal presence at sleep onset or using breastfeeding as a self-soothing strategy.

Question: Could a Behavioural Sleep Intervention Affect the Continuation of Breastfeeding?

Evidence-based research findings.

A literature search using the terms *breastfeeding* and *sleep intervention* found 79 research articles of which none (0) were relevant to the age category of infant or to the topic of the question.

Although research investigating behavioural sleep interventions include breastfeeding mother-infant dyads as participants, no research to date has reported data on the effects a behavioural sleep intervention has on breastfeeding. Mindell et al. (2006, p. 1270) write “mothers indicated that behaviourally-based sleep interventions had no effect on maintaining the practice of breast feeding or on infant’s total daily fluid intake”, but no data were reported.

Question: How do Parental Factors Promote Infant Sleep Development?

Research cited by the parenting resources.

Most of the parenting resources focused on when to respond to infants crying at sleep times and whether a child needs to develop the ability to self-soothe. Again no research that was relevant to infant sleep outcomes and maternal responsiveness at night-time was directly cited. Examples of

research that was not relevant included Perry, Pollard, Blaicley, Baker and Vigilante's (1995) research into childhood trauma and brain development; Brazy's (1988) investigation into crying in neonates and cerebral blood volumes; and Hertsgaard, Gunnar, Erickson, and Nachmias's (1995) investigation into disorganised attachment and adrenocortical responses to the Strange Situation Procedure (also referred to as SSP but written in full here for simplicity). There are many other examples of research that do not pertain to typical healthy 6 month to 2 year old infants who are experiencing Infant Sleep Disturbance (ISD). These are captured in Table 1.

Evidence-based research findings.

A literature review using the search terms *infant sleep* and *responsiveness*, *parental involvement*, and *maternal involvement* found 28 research articles, of which 10 were relevant. Articles were excluded if they did not focus on infant sleep as an outcome.

The research included divides into different definitions, aspects, and measurements of responsiveness, such as daytime sensitivity (Priddis, 2009), maternal emotional availability (Philbrook & Teti, 2016; Scher, 2001; Scher & Dror, 2003) parental involvement at night-time (Thunstrom, 1999; Morrell & Steele, 2003; Burnham, Goodlin-Jones, Gaylor, & Anders, 2002; Higley & Dozier, 2009), and responsiveness to infant crying (Sadeh, et al., 2016; Tikotzky & Sadeh, 2009;).

One study researched daytime sensitivity. Priddis (2009) investigated 65 infants' sleep patterns and each mother's sensitive responsiveness as measured by the Child-Adult Relationship Experimental (CARE) Index. The results of the Index showed a strong association between a lower sensitivity rating for the poor sleep group compared with the good sleep group.

Three studies researched Emotional Availability (EA) and infant sleep outcomes. Philbrook and Teti (2016) coded video recordings of maternal EA, bedtime parenting practices, night-time infant sleep in a sample of 109 mothers and their infants at 1, 3, and 6 months of age. Maternal-reported questionnaires were also used to collect data on maternal depression and sleep quality. Higher EA, measured using the EA Scales, with lower levels of close contact and arousing bedtime activities, were associated with more infant sleep and rapid increases in infant sleep with age. The second study, by Scher (2001), examined the relationship between 12 month old infant sleep and mother-child relationships in 37 dyads. One of the results of this study was that the mother's sensitivity measured by the five EA was not associated with sleep regulation.

Scher and Dror (2003), in a study of 68 mothers of infants aged 9-15 months, collected data using a sleep questionnaire, self-report measures of adult attachment (using the adult romantic attachment measure) (Brennan, Clark & Shaver, 1998), and maternal feelings (using the maternal feeling questionnaire (MFQ), which is an adapted version of the parent to infant attachment questionnaire (Condon & Corkindale, 1998)). Data comparing the routines of the infants found those with sleep problems were more likely to fall asleep in the presence of their mothers. Scher and Dror (2003) reported the pleasure scale on the MFQ was correlated with sleep problems, and reported this as a "significant link" between positive emotional maternal availability during daytime interactions which were associated with greater infant night waking.

Four studies investigated parental involvement at night-time and infant sleep difficulties. A study by Thunstrom (1999) collected data (questionnaires) from 83% of 2,518 caregivers, who had infants aged 6-18 months. Data collected showed 129 (6.2%) of the infant sample would be defined by the International Classification of Sleep Disorders (ICSD) as having a severe sleep

problem. The sleep problems were found to be correlated with intensive parental behaviours/intervention at evening and night-times. The author suggests intensive parental behaviour/intervention may be a response to a parent's insecurity around the role of parenting.

Morrell and Steele (2003) investigated the role of maternal and infant factors in 100 infants both with and also without sleep problems over the first two years of life. The data were collected through maternally-reported questionnaires on infant sleep, maternal adjustment, infant temperament, maternal cognitive and affective measures, maternal interactive bedtime behaviour, sleep diaries, and the Strange Situation Procedure. They reported a number of results, including attachment results (which are reported in the section below on attachment and infant sleep). They also reported that the infants in their study, who developed sleep difficulties, had parents who settled them by using what they described as "active physical comforting".

Burnham, et al. (2002), collected data on 80 infants who were studied by videosomnography at five periods across the first year of life and their parents completed questionnaires. They found three variables that were associated with self-soothing at 12 months: declining periods of time out of the cot over the first 12 months, greater amounts of quiet sleep from birth, and longer response times by caregivers to infant wakings at 3 months of age. Conversely, Higley and Dozier (2009) found that 44 mothers did not differ in how frequently they responded to their 12 month old securely or insecurely attached infants at night time but they did differ in the sensitivity and consistency of their responding. They investigated the association between maternal night-time responding and infant attachment using maternal-reported questionnaires and diaries, video-taped observations, and the Strange Situation Procedure. They report the responses of mothers with securely attached infants were in tune with the baby's signals and

consistent, but that in contrast, mothers of insecurely attached infants had inconsistent responses across awakenings and made multiple soothing attempts.

Two studies investigated reasons why parents responded to an infant crying the way they do. One study investigated if parental response to infant crying can influence infant sleep difficulties. Sadeh et al. (2016) studied 144 married couples who were either parents of infants, who had night waking difficulties; parents of infants, who did not have sleep difficulties; or couples without children. Parents with infants who had sleep difficulties chose to intervene earlier when shown a video of an infant crying. Sadeh et al., suggest these findings show that parents of sleep-disturbed infants may have a lower tolerance to infant crying and therefore display excessive involvement while soothing their infants, which then leads to infant sleep problems.

In the second study Tikotzky and Sadeh (2009) examined data collected from 85 mother-infant dyads via maternal-reported questionnaires both during and after pregnancy, actigraphy monitor, and sleep logs when the infants were at 1, 6, and 12 months of age. Data showed that more involvement from parents at bedtime was associated with more night wakings at 6 months (measured by both the actigraphic measure and the sleep logs) and predicted night waking at 12 months. Tikotzky and Sadeh suggest there is a relationship between when and why mothers responded to night-time crying and how it affected infant sleep. They found that mothers, who believed their infants experienced distress during the night, engaged in more night-time interventions, than other mothers in the study and this resulted in poorer infant sleep outcomes at 12 months. Limitations to this study were acknowledged by the researchers as the difficulty of generalising the results because the population group only included highly educated mothers

from the mid to high socioeconomic status (SES) bracket with nonclinical, solitary sleeping, and first-born infants.

Summary of findings.

One study, discussed above, found lower daytime maternal sensitivity was associated with poorer infant sleep. Of the three studies that measured maternal emotional availability one found positive EA at daytime was associated with greater night waking, the second found the higher EA was associated with better sleep outcomes, as long as it was accompanied by lower levels of close contact. The third study found no association between EA and infant sleep regulation. Four studies measured parental involvement, three found an association between more intensive and physically comforting behaviours and greater levels of infant sleep problems. In contrast one study found it was not the frequency of the responding but rather how consistent parents were when responding that was associated with sleep outcomes. Finally, two studies found an association between infant sleep difficulties and parents who intervene quicker to infant crying and/or believed their infants were distressed.

Question: Can an Infant's Attachment Affect Their Development of Sleep and Vice Versa?

Research cited by the parenting resources.

No research was cited by the resources.

Evidence-based research findings.

A literature search using the search terms *infant attachment* and *infant sleep* located 63 research articles of which twelve were relevant. Research cited used different measures of infant attachment classification, the Strange Situation Procedure and Attachment Q-Sort (also referred to as AQS but written in full here for simplicity).

The Strange Situation Procedure is identified by many as the gold standard assessment of attachment. Ainsworth and colleagues devised an empirical test in 1978 that measured infants' attachment to their caregiver and placed them into one of three categories. The Strange Situation Procedure involves a structured observation in a laboratory setting, of an infant's responses to two separations and subsequent reunion with their caregiver. The infant's responses are classified by examining the patterns of behavioural organisation of the infant's attachment behaviours. Ainsworth labelled these attachment patterns as insecure-avoidant (A), secure (B), and insecure-ambivalent/resistant (C). Main and Solomon (1990) added a fourth category: disorganised – (D) for children who were identified as not finding an organised attachment to their caregiver.

An alternative measure of attachment is the Attachment Q-Set devised from Q –Sort methodology by Waters and Deane (1985) and Vaughn and Waters (1990). It is based on a period of naturalistic observation of interaction between infants aged 1-5 years and their caregivers. A trained observer sorts 90 standardised statements describing a child's behaviours into the degree in which the child exhibits them. The scoring criteria designed by Waters (1995) yields scores of *security* and *dependency* rather than the attachment classifications of the Strange Situation Procedure. The scores range from *very secure* (+1.0), to *very insecure* (-1.0). Although the Attachment Q-Set classifies attachment security it assesses similar but different dimensions of the construct compared to the Strange Situation Procedure. Specifically, the Strange Situation Procedure measures an infant's attachment behaviour system during stressful situations, whereas the Attachment Q-Set measures an infant's exploratory system in a natural setting (van Ijzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004).

Five studies found insecure-ambivalent/resistant (C) attached infants woke more at 6 months but not all the four studies found this result at 12 months. Beijers, Jansen, Riksen-Walraven and de Weerth (2011) conducted a longitudinal study of 193 infants and their mothers. Sleep diaries of two weeks' duration were collected daily for the infants first 6 months and then again at 12 months. The Strange Situation Procedure was used to assess attachment at 12 months of age. Maternal-reported questionnaires on infant temperament and maternal depression were collected along with a video-taped session of maternal sensitivity and cooperation at 5 weeks of age. Their first finding was that night waking reflected emerging attachment patterns. Insecure-ambivalent/resistant (C) attached infants experienced more night waking in the first 6 months of life than other infants classified in other attachment categories at 12 months of age. Secondly insecure-avoidant attached (A) infants exhibited a fewer number of reported night wakings at 6 months than the disorganised attachment infants (D) exhibited, who, in turn, had fewer night wakings than securely attached (B) infants, and all woke less than the insecure-ambivalent/resistant attached (C) infants. Beijers et al. (2011) also found that attachment classification was not related to night waking at 12 months of age.

In a study of 14-16 month old infants, Morrel and Steele (2003), found that the insecure-ambivalent/resistant (C) group had more night wakings for longer durations compared to infants with other attachment classifications. In addition, a follow-up assessment at two years of age showed the ambivalent infant group were more likely to have sleep problems that persist.

Ding, Xiu Xu, Wang, Li and Wang (2014) investigated the relationship between 160 infants' attachment classifications using the Strange Situation Procedure, their attachment type in early childhood by using the Attachment Q-Set and their behavioural outcomes measured by the Child

Behavior Checklist (Achenbach & Rescorla, 2001). The results of their study concluded insecure- ambivalent/resistant (C) infants had more sleep problems than insecure-avoidant (A) and secure (B) classified infants.

McNamara, Belsky and Fearon (2003) analysed sleep of a subset from a larger 1,000 sample of mother-infant dyads, where those in the subset group were identified as insecure. For this subset study attachment was assessed by the Strange Situation Procedure and maternal reports were taken. They found infants who were classified insecure-avoidant (A) showed less night waking at 6 months and shorter duration of night waking episodes at 12 months compared to those classified with insecure-ambivalent/resistant (C) attachment.

Simard, Bernier, Belanger, and Carrier (2013) found in their study insecure-ambivalent/resistant (C) attached infants slept less according to maternal-reported measures but this was not shown by objective measures. They investigated the relationship between infant attachment at 18 months as measured by the Strange Situation Procedure, and the sleep of those same infants using maternal-reported sleep diaries and actiwatch measurements at 2 years of age. They found infants with insecure-ambivalent/resistant attachment (C) had longer night-time wake duration from maternal report but not from actigraphy measurements.

One study, Scher (2001), found secure (B) and insecure-ambivalent/resistant (C) attached infants woke more than insecure-avoidant (A) infants. Scher examined the link between infant sleep patterns and mother-infant attachment in 94 mother-infant dyads. He collected data using the Strange Situation Procedure, maternal-reported questionnaires on temperament and sleep, and actigraph sleep recordings. The results showed that infants who were reported as night wakers were classified with secure (B) and insecure-ambivalent/resistant (C) attachment.

Two studies found the infant's attachment did not predict waking during the first year of life.

Higley and Dozier's (2009) research, already discussed in an earlier section, found no significant difference between 27 securely (B) attached infants and 17 insecurely (A, C, & D) attached infants who were classified as "good sleepers", and with those who woke and signalled at 12 months of age.

Zentall, Braungart-Rieker, Ekas, and Lickenbrock (2012) studied 46 caregiver-reported night wakings at 7, 12, and 14 months of age. Attachment was measured at 12 months with mothers and at 14 months with fathers using the Strange Situation Procedure. At 7 months of age infants with secure (B), insecure-ambivalent/resistant (C), and disorganised (D) attachment patterns did not differ on night wakings, however, by 12 months of age infants with a secure classification woke their parents less at night than infants with an insecure classification who continued to seek parent regulation.

One study found infants with a disorganised attachment signalled more than those with other classifications. Pennestri, et al. (2015) evaluated 134 mother-child dyads sleep quality and duration from maternal reports at 2, 12, 24, and 36 months, and also assessed child attachment at 36 months of age, using the Strange Situation Procedure. They found children classified with a disorganised (D) pattern signalled more, had shorter periods of sleep (at 12 months only) and had a shorter duration of nocturnal sleep than those children classified as insecure-ambivalent/resistant or secure.

Three studies used the Attachment Q-Sort or the Attachment Q-Set (Vaughn & Waters, 1990) rather than the Strange Situation Procedure as a measure of attachment. Belanger, Bernier, Simard, Bordeleau, and Carrier (2015) measured 62 infants' sleep quality at two years using an

actigraphy monitor, maternal sleep diaries, and measured attachment at 15 months (using the observer version of the Attachment Q-Sort). They found children with a securely attached pattern slept more at night-time and had greater sleep efficiency.

Scher and Asher (2004) examined the link between infant attachment security at 12 months and sleep-wake regulation. Infant attachment security was assessed with the Attachment Q-Set. Sleep-wake regulation was assessed via actigraph measurements, maternal sleep log and questionnaires (a sleep habit questionnaire) (Scher et al., 1995) and the Infant Sleep Questionnaire (ISQ) (Morrell, 1999). Scher and Asher (2004) found infant dependency was associated with maternal reports of sleep problems but not with the objective sleep records documented in measurements derived from the actigraph monitor. The differences between parent reports and actigraph monitor records is an ongoing issue in infant sleep research. That there are discrepancies between the two report methods does not mean the parent reports are incorrect, but rather the differences occur because the two reporting systems are measuring two different features of infant sleep, namely, all awakenings (actigraph) and signalled awakenings (maternal report).

Bernier, Belanger, Tarabulsky, Simard, and Carrier (2014) investigated the association between maternal sensitivity, infant sleep, and attachment. Maternal sensitivity was measured by the Maternal Behaviour Q-Sort ([MBQS] Pederson and Moran, 1995) when the 63 infants in the study were one year old. A year later infant sleep was measured via actigraph monitor and sleep diaries. Attachment was measured via the Attachment Q-Sort when the infants were 2 years' old. The data showed that infants who had more sleep had attachment security that was related to

maternal sensitivity. The researchers concluded that sleep was not an outcome of attachment but rather attachment was an outcome of sleep.

Summary of findings.

Five studies found that infants classified with an ambivalent/resistant (C) attachment exhibited more night wakings although one study only found this for maternal-reported sleep but not via the objective measurement. As reported above this difference between maternal reports and actigraph reports are because each measures a different feature of infant sleep. It might be reasonable to expect that the number of night awakenings to be much the same for all infants because the aspects of sleep architecture common to all. But, equally, it might be that signalled awakenings might be seen to differ between those infants who can self-soothe (and, therefore, whose signalled wakings appear to be infrequent) and who, as a consequence, are classified as *good sleepers*, and, in contrast, those whose wakings are frequently signalled, and who are, as a consequence classified as *poor sleepers*. Two studies showed no difference between attachment classification and the amount of waking for infants less than 12 months' old, but after 12 months one of the studies found infants with a secure (B) classification woke less. Although not all of the studies reviewed had infants with disorganised attachment in their research samples, one study found those classified as disorganised (D) had a lesser amount of sleep than infants classified with secure (B) and ambivalent/resistant (C) attachment. Finally, three studies used Attachment Q-Sort measurements rather than the Strange Situation Procedure. All of them found infants with greater attachment security had longer portions of sleep when measured via maternal report. It has been suggested that attachment classification is only one factor among others to contribute to difficulties. Active physical comforting, child temperament, and maternal cognition are also predictors of persistent sleep difficulties (Sadeh et al., 2010, p.92).

Question: Could a Behavioural Sleep Intervention Affect Attachment?

Research cited by the parenting resources

Sunderland (2006, p. 79) in *The Science of Parenting* writes:

Infants who have been trained not to cry can often be seen staring into space with a fixed stare. Allan Schore calls it “the black spot in going-on-being” or “conservation-withdrawal”. In attachment theory, when a child starts to bottle up his feelings rather than express them, the process is known as PROTEST-DESPAIR-DETACHMENT.

From what can be deduced from this statement the crying experienced during a sleep intervention could affect an infant and in turn their attachment to their carer as shown in actions such as staring which are interpreted as conservation-withdrawal and protest-despair-detachment, but there is no empirical evidence that infants behave in the described manner. Protest-despair-detachment is explained by Schore (2003 p. 67) as “these dual responses also represent activation of the two components of the autonomic nervous system (ANS): first the energy-expending sympathetic branch; and then, the energy-conserving parasympathetic branch”. The evidence for such statements comes from the literature on traumatised children. Again there is no research evidence to support claims that an infant who is experiencing a behavioural sleep intervention comes anywhere near to levels of distress characteristic of trauma.

Evidence-based research findings.

A literature review using the terms *attachment* and *sleep intervention* found 21 articles, of which two were relevant. Gradisar et al., (2016) researched possible adverse effects of graduated extinction, bedtime fading, and sleep education on 43 infants aged 6-16 months. At 12 month

follow-up the mother-child dyads had their attachment assessed via the Strange Situation Procedure. They concluded that there were no long-term effects on parent-child attachment. Furthermore graduated extinction and bedtime fading provided positive sleep outcomes compared to the control group who received sleep education. Other outcomes included no long-term effects on the children's emotions or behaviours.

Mindell et al. (2006), in a review of behavioural treatments of bedtime difficulties and night waking, included three studies that found that the infant's relationship with their caregiver was not affected after the sleep intervention had been carried out. These studies include France, Blampied, and Wilkinson (1991), Eckerberg (2004), and France (1992). Mindell (2005, p. 152) writes in her book *Sleeping Through the Night* "*these studies have actually found that young children are more securely attached to their parents following sleep training*", but this is a misleading quotation because attachment was not measured in any of these studies. For example, France (1992) instead concluded that scores improved on likability, emotionality/tension and security on the Flint Security Scale (Flint 1974) and the Child Behaviour Characteristics Scale (Borgatta & Fanshel, 1970).

Summary of findings.

One study found no long-term effects at a 12 month follow-up from a behavioural sleep intervention. No other research using attachment measures such as the Strange Situation Procedure and/or longitudinal data have determined whether behavioural sleep interventions can affect attachment.

Question: Do Solitary Sleeping Infants Sleep Better than Bed-Sharing Infants?

Research the cited by parenting resources.

Ezzo and Bucknam (2006, p. 58) in *On Becoming Babywise* write “*the most serious sleep problems we’ve encountered are associated with parents who sleep with their babies*”. They cite research on this page by the University of Massachusetts Medical School “that co-sleeping may prevent, rather than ensure, a good night’s sleep” (Madansky and Edelbrock, 1990). Madansky and Edelbrock, 1990 studied the sleep patterns of 303 infants aged between 2-3 years. Co-sleeping infants were more likely to have sleep problems, including night waking, and difficulty falling asleep, both at initial assessment, and at one year follow-up. Many other statements were made proclaiming a positive association between co-sleeping and infant sleep development; however, either they did not reference the research or the research did not pertain to what they were claiming, for example, the association between co-sleeping, and SIDS.

Evidence-based research findings.

A literature review using the terms *bed-sharing*, *co-sleeping* and *infant sleep* identified 345 research articles of which 22 were relevant. Articles that were not included involved research on infant sleep and Sudden Infant Death Syndrome (SIDS) or Sudden Unexplained Death in Infancy (SUDI) or those that focused on maternal outcomes rather than on infant outcomes. There is confusion both within the parenting resources and research around the definition of co-sleeping, for example, some sources defined as it as bed-sharing and others as room-sharing. Occasionally boundaries of what constitutes co-sleeping are mentioned within the research articles, but this is not consistent.

Ward (2015, p. 675) reviewed 34 studies that discussed reasons for bed-sharing and found the main themes to be: “(1) breastfeeding, (2) comforting, (3) better/more sleep, (4) monitoring, (5)

bonding/attachment, (6) environmental, (7) crying, (8) tradition, (9) disagree with danger or bed-sharing, and (10) maternal instinct”.

Three studies showed that the percentages of time awake at night were similar for infant sleep locations but this differed for the number of awakenings. These results are to be expected because of the proximity of the parent to detect and respond to an infant waking. Where there is co-sleeping the time is typically shorter. In a study with a small sample size Mao, Burnham, Goodlin-Jones, Gaylor, and Anders (2004) examined the sleep of eighteen 3-15month old infants, using video recordings. The nine co-sleeping infants exhibited differences in sleep-wake patterns compared with the nine solitary sleeping infants. They found co-sleeping infants had more, yet shorter, night wakings than the solitary sleepers making the percentage of the night-time spent awake similar.

Baddock, Galland, Bolton, Williams, and Taylor (2006) compared the sleep of 40 bed-sharing infants and 40 cot-sleeping infants aged between 5-27 weeks of age. The results showed a similar total sleep time for both groups with the bed-sharing median 8.6 hours and cot-sleeping median 8.2 hours. Lucas-Thompson, et al. (2009) investigated sleep arrangements in 92 infants measuring their sleep, waking, sleep location, and their physiological stress response to inoculations at ages 6 and 12 months. As part of sleep waking and sleep location data they found no significant association with night waking and sleep location at 6 months or 12 months; however, they report that those who were less frequent night wakers in their study were solitary sleepers.

Two studies showed similar amounts of sleep across the sleep locations when measured with objective sleep measures but not by maternal report. Volkovich, Ben-Zion, Karny, Meiri, and Tikotzky (2015) examined 153 families and, among other factors, the impact of co-sleeping on

infant and maternal sleep measured through questionnaires, actigraphy, and sleep diaries. Co-sleeping mothers reported more night waking in their infants than mothers of solitary sleeping infants, but no significant difference in waking frequency was found between the two sleep locations when assessed by the objective sleep measure. This result (as with others noted above) is to be expected because the objective sleep measure assesses sleep patterns rather than when and how an infant signals during the night. The co-sleeping mothers may report more awakenings because of their proximity to the infant, or they may have infants who awaken and signal more. Proximity thus confounds parental reports of frequency and duration of night wakings for co-sleeping versus solitary sleeping infants, and because of this only data from objective measures should be used to make assessments of the two sleeping situations.

The second study that showed similar amounts of sleep across the sleep locations was conducted by Teti, Shimizu, Crosby, and Kim (2016), who obtained information from a questionnaire, actigraphy and sleep diaries from 139 families when their infants were 1, 3, 6, 9, and 12 months of age. Mothers of persistent (beyond six months) co-sleeping infants reported more infant night waking than those mothers of infants who consistently were solitary sleepers. But, the actigraphy data showed that mother's, not the infant's, sleep was disrupted in co-sleeping arrangements. Again results produce the same effect when comparing results between maternal report and actigraphy measurement of infant sleep. Mothers report on infant's behaviour around awakenings and the actigraphy assesses infant sleep patterns. They are reporting on different processes.

Initial findings from one study showed room-sharing infants appeared to have more sleep problems. Mindell, Sadeh, Kohyama, and How (2010) assessed parent behaviours and other

factors with sleep outcomes in 29,287 infants aged from birth to 36 months. In their initial findings they concluded children not room-sharing have more sleep, less difficulty at night-time, fall asleep faster, less night waking, and appeared to have fewer sleep problems. With further investigation of the data they reported room-sharing may not account for the differences. Instead it showed that a parent being present at sleep onset, not co-sleeping, is a predictor of night-time sleep difficulty.

Two studies found non-bed-sharing infants slept more. Hysing, et al. (2014) examined 55,831 maternal reports of their infants sleep duration and night waking from 6 to 18 months. They reported bed-sharing as a predictor of night waking and shorter sleep duration.

Elias, Nicolson, Bora, and Johnston (1986) investigated infants' sleep/wake patterns over 8 different time periods during the first two years of life. One of their key findings was that there is a significant association between bed-sharing and shorter bouts of sleep length compared to solitary sleeping infants. They found those infants who breastfed and shared a bed had less overall sleep compared to those who breastfed and solitary-slept.

Summary of findings.

Most studies reported more night wakings in bed-sharing infants even in the studies when total amount of sleep were similar. Objective sleep report measures showed less night waking in co-sleeping infants than maternal report. Similar to other studies on parental perceptions when bed-sharing, parents may notice and report more night-time waking as they are privy to their infant's movements and noises due to their proximity to their infant (Ramos, Youngclarke & Anderson, 2007). This proximity also allows for parents to respond to their infant's awakenings more quickly which often results in shorter wakenings for the co-sleeping infant and parents. This

association of quickly responding and re-entering sleep faster can result in parents who were not intending to co-sleep using it as a coping strategy. Initial findings from one study showed room-sharing infants appeared to have fewer sleep problems, but researchers concluded it was the association with parental presence at sleep onset rather than sleep location.

Question: Are Positive Outcomes More Favourable for Those Infants Who Bed-Share Compared to Infants Who Do Not?

Research cited by the parenting resources.

While many claims were made within the popular media sources that co-sleeping, particularly bed-sharing, enhanced attachment, no research was directly cited. McKenna in *Sleeping with Your Baby* (2007, p. 47) writes that co-sleeping promotes “enhanced attachment and parental fulfilment - especially for working mothers, increases time with baby during the night, enhances attachment, and helps the mother to feel fulfilled as a parent”. No research is included that confirms this claim of enhanced attachment. Gordon and Goodavage (2002, p. 23) in *Goodnights* write “children who had never slept in their parents’ beds were harder to control, less happy, had more tantrums, handled stress less well, and were more fearful than routinely co-sleeping children”. They cite a study by Forbes, Weiss, and Folen (1992) who investigated the co-sleeping habits of military children. This study does not conclude what the book claims. The sample were children aged 2-13 years who co-slept when their fathers were deployed by the US military. Mothers filled out a questionnaire about family sleep habits, the child’s school behaviour and grades, behaviour and social functioning at home, family psychiatric history, and one question about separation difficulties. They reported that the children in their study who co-slept when their fathers were deployed, less frequently receive a psychiatric diagnosis. Other research that is cited, but was not relevant, including Crawford (1994), who examined the

implications of sleep location on personality development; and Keller and Goldberg (2004), who studied co-sleeping and its influence on children's independence. None confirmed an association between co-sleeping and positive psychosocial outcomes.

Evidence-based research findings.

A literature review using the terms *infant sleep*, *co-sleeping*, *bed-sharing* and *infant outcomes* located 345 articles, of which 11 were relevant.

One study assessed the association between sleep location and its effect on cognitive, emotional, and behavioural development of infants. Okami, Weisner, and Olmstead (2002) conducted a longitudinal study of 205 families followed from the third trimester of pregnancy until their target child was 18 years old. They reported that at 5 months old 35% of infants were bed-sharing (either intermittently or consistently) and /or room-sharing. A battery of cognitive and emotional/behavioural tests were used at 6 years of age and then again in adolescence. From these data they concluded that the children studied showed neither negative nor positive consequences of bed-sharing.

Another study investigated sleep location and its effect on neurobehavioural development. Hunsley and Thoman (2002) studied 101 infants classified as short-term co-sleepers, long-term co-sleepers, or as non-co-sleeper infants and then compared their sleep-wake states using a Motility Monitoring System at 5 weeks old and 6 months old. They found long-term co-sleeping infants had more and longer bouts of quiet sleep, less active sleep, and fewer arousals in active sleep when sleeping alone. They interpret from this sleep pattern, which they identify as having been found to be an indicator of stress, that the experience of co-sleeping may have a negative impact on neurobehavioural development.

Three studies found an association between co-sleeping and cortisol response to potentially stressful situations. Lucas-Thompson et al. (2009) examined 92 infants' physiological stress responses in relation to their sleep arrangements and patterns of night waking at ages 6 and 12 months. Sleep arrangements and infant waking were assessed by maternally-reported questionnaires and the physiological stress response was measured by saliva cortisol samples collected prior to, and following an inoculation at time points 6 months and 12 months. They found co-sleepers and infants who woke frequently at night had an increase in cortisol response after their inoculations at both ages measured.

Tollenaar, Beijers, Jansen, Riksen-Walraven, and de Weerth (2012) studied 163 infants to see whether sleep location had an impact on infants' cortisol reactivity to a bathing session at 5 weeks of age, and then to a vaccination at 2 months of age. They reported similar cortisol responses to a vaccine at 2 months of age for co-sleepers (defined as within the parent's room) and solitary sleepers and a heightened cortisol response to the bathing session for solitary sleepers at 5 weeks of age. The researchers note it is difficult to get a reliable measure of cortisol at 5 weeks of age as cortisol development is still not consolidated.

Finally, Beijers, Riksen-Walraven, and de Weerth (2013) found that solitary sleepers but not co-sleepers showed greater response in cortisol following a stressful situation in their examination of 193 infants. They examined whether co-sleeping (defined as sleeping in the parent's bed or parent's room) was associated with infant cortisol regulation by measuring cortisol level following the Strange Situation Procedure at 12 months of age. They reported the infants who had more weeks co-sleeping showed lower infant cortisol level to the Strange Situation Procedure.

In a study investigating whether bed-sharing practices affected postpartum bonding at 6 weeks and 4 months in 175 mother-infant dyads, Mitchell, Hutchison, Thompson, and Wouldes (2015) collected data, using maternal-reported questionnaires. They found that mothers in the study who bed-shared scored higher on being irritated or annoyed by their baby. They interpret this as showing that bed-sharing does not enhance maternal-infant bonding.

Two studies investigated attachment and sleep location. Mileva-Seitz et al. (2016) assessed, among other factors, bed-sharing at 2 months of age in 550 mother-infant dyads and also attachment classification at 14 months. They found no evidence linking the frequency of bed-sharing and secure attachment when using the classifications *solitary sleeper*, *some bed-sharing* (classified as once a month to three times a week), and *frequent bed-sharing* (classified as four times or more a week). But found evidence for those infants in their study classified with an insecure attachment being associated with solitary sleep when it was measured against *any* bed-sharing (combination of *some* and *frequent* bed-sharing). Mileva-Seitz et al. (2016) caution against over-interpreting these results because of the infrequency of the bed-sharing. They propose the result may have been an association between *any bed-sharing* and parental responsiveness or flexibility at times of heightened distress, illness, and such like, that classifies them as bed-sharers when it is not a routine practice of the family.

Higley and Dozier (2009) studied 44 12 month old infants and their mothers, none of whom are described as co-sleeping, over three consecutive nights, using a home video system. Other measures included a maternal self-report diary on night-time interactions, a questionnaire on infant temperament, and an assessment of the infant's attachment using the Strange Situation Procedure. Seventy-five percent of the mothers never took their babies back to the maternal bed,

25% reported that they did on at least one of the 3 days. They conclude there was no difference in attachment classification for either of these parenting behaviours.

Two studies examined the association between sleep location and maternal emotional availability. Teti, Kim, Mayer, and Countermine (2010) observed bedtime maternal emotional availability and concluded the bedtime emotional availability may be more important than bedtime practices in predicting infant sleep quality. Five of the 45 infants aged between 1 to 24 months shared a bed for part of the night with their parents. Emotional availability was described during the bedtime routine rather than through the night which makes the link indirect, as Burnham (2013) highlights. Tollenaar et al. (2012) (critiqued above) found no difference in EA between co-sleeping and solitary sleeping mothers.

One study investigated sleep locations and their effect on infant daytime play. Taylor, Donovan, and Leavitt (2008) examined infant sleeping arrangements (non-co-sleeping, inconsistent co-sleeping, and habitual co-sleeping) and the interaction during the day between 70 mother-infant dyads. The primary finding was the infants in the study who experienced inconsistent sleeping arrangements displayed less positive play at 9 months compared to those infants who experienced consistent sleeping arrangements either as a solitary sleeper or a co-sleeper at 6 months of age.

Summary of findings.

One finding reported neither positive, nor negative, consequences of bed-sharing, and one found an association between co-sleeping and a negative impact on neurobehavioural development. Of the studies involving cortisol response measurements, two measured cortisol response following inoculations one found the response higher in co-sleeping infants, and one found no difference

between sleep location and response. One study found the cortisol response to the Strange Situation Procedure higher in solitary sleeping infants. One study reported no evidence that co-sleeping enhanced postpartum parenting bonding at 6 weeks and 4 months and one study showed no evidence that bed-sharing and secure infant attachment are associated. Two studies reported data on sleep location and quality, and maternal availability. Finally, one study reported an association between inconsistent bedtime arrangements (sometimes co-sleeping and sometimes bed-sharing) and lower levels of positive daytime play in infants at 9 months.

Question: Do Attachment Parenting Practices Produce Better Outcomes for Infants?

Research cited by the parenting resources.

No research was cited in the resources to explain any association between attachment parenting practices and attachment theory. Attachment parenting is a term that was introduced in the late 1990s for a specific style of parenting. Dr William Sears, who also coined the term attachment parenting, is probably the best-known advocate of the movement. He describes attachment parenting as child-led rearing which occurs by responding to a child's cues "appropriately" (Sears et al., 2001). Miller and Commons (2010) explain attachment parenting practices as breastfeeding on demand, co-sleeping, rapid response to infant crying, as well as extensive holding and carrying.

No evidence-based research that proposed attachment parenting as a benefit to infant sleep difficulties were cited in the media sources. Many sources from the attachment parenting philosophy incorrectly attributed their principles to attachment theory but with no evidence to support such claims.

Evidence-based research findings.

A literature review was carried out using the terms *attachment parenting*, *attachment* and *infant outcomes* and 679 articles were located of which only one was relevant. Articles that were not relevant investigated attachment theory rather than attachment parenting philosophy. As examples of those that were not relevant, one article critiqued attachment parenting from a feminist point of view (Liss & Erchull, 2012) and another gave the prevalence of attachment parenting practices in a sample of 275 American families (Green and Groves, 2008).

Miller and Commons (2010) investigated the benefits of attachment parenting practices. The following sections examine concepts they outline in their report, research they provide, and additional research that has sourced.

Co-sleeping.

Co-sleeping is explored in Miller and Commons (2010), who cite research from McKenna and colleagues (McKenna, Ball & Gettler, 2007; McKenna & Mosko, 1990; McKenna 2007).

McKenna's research discusses the history, prevalence, and perceived physiological benefits of co-sleeping. None of this research gives an evidence base for co-sleeping practices and its benefits for infant sleep.

Carrying and holding.

Miller and Commons (2010) cite three studies that are associated with carrying/holding and the purported benefits for infants, namely: Anisfeld, Casper, Nozyce, and Cunningham (1990); Hunziger and Barr (1986); and St James-Roberts et al. (2006). Anisfeld et al. (1990) investigated whether more physical contact through carrying promoted secure attachment at 13 months of age in infants born in low SES mothers. Mothers in the more physical contact

(experiment) group were given soft baby carriers to use with their newborns and the less contact (control) group were given infant seats. By 3.3 months mothers in the experiment group showed greater contingent responsiveness to their infants' vocalisations compared to the control group. At 13 months attachment was assessed using the Strange Situation Procedure and the experiment group showed more infants (19) were securely attached to their mothers compared to the control group (10). The researchers propose possible causal relationships between increased physical contact from using a baby carrier and secure attachment.

Hunziker and Barr (1986) studied the effects of daily 3 hours of parental holding either in a carrier or in the arms on the amount of crying in 3-12 week old infants. They reported findings from 4, 6, 8, and 12 weeks of age. They found at 6 weeks of age the infants in the supplemental carrying group fussed and cried 43% less overall and 51% less during the hours of 4 p.m. to midnight compared to the control group. This pattern was similar but with smaller amounts of crying at 4, 8, and 12 weeks. They found an association between an increase in feeding frequency and contentment in the supplemental group but no association between supplemental carrying and sleeping or feeding duration.

St James-Roberts et al. (2006) studied the parenting practices in three groups of parents during their infants' first 12 weeks of life. The groups were labelled London, Copenhagen, and proximal care. The proximal care group aspired to hold their infants between the hours of 8 a.m. – 8 p.m. for at least 80% of the time, breastfeed frequently, and respond to their infant's cries rapidly. The parenting practices were recorded by parental-reported behaviour diaries and questionnaires. The results illustrated an association between the London group who held their infants less and more crying and fussing compared to the Copenhagen group and the proximal care group. There was

no difference between the groups in the amount of unsoothable crying. Proximal care parents reported more night waking and crying compared to the other two groups. This was possibly because they were co-sleepers and this confounded the data (because of proximity) as has already been noted as an effect on data quality.

Other studies have investigated supplementary carrying and found no significant reduction in crying (St James-Roberts, Hurry, Bower & Barr, 1995; Barr et al., 1991; Walker & Menahem, 1994). Note that all three studies were conducted on infants in the first 12 weeks of life, prior to the developmental period of 3 - 4 months when an infant's amount of crying becomes more stable.

St James-Roberts et al., (1995) compared the effect that two interventions had on reducing crying in the first 12 weeks of life. There were two intervention groups and a control group. The first intervention group was an increased parental responsiveness group, who followed a simplified list of Taubman's (1984) recommendations, which focused on avoiding and understanding crying. The second intervention group was a supplementary carrying group, who were instructed to carry their infants for a minimum of three hours a day, and the third group was a control group. Data were collected using audio recordings and parental-reported diaries and questionnaires. The results showed no difference between increased responsiveness, supplementary carrying, and control groups in the amount of fussing or crying at 2, 6, and 12 weeks of age. Barr et al. (1991) investigated whether supplemental carrying by 50% in 4 week old infants reduced the amount of fussing or crying compared to a control group. No differences were found.

Responsiveness to crying.

Miller and Commons (2010) discussed responsiveness to crying as an attachment parenting practice by highlighting the developmental course of crying (as discussed above), the type of cry that is responded to depending on the infant's age, and the importance of considering the behaviours that precede crying. They suggest that a high degree of responsiveness to an infant should not lead to an increase in crying; but rather crying should decrease when the caregivers are close, because the infant is being held and therefore the caregiver is more aware of early signs of distress. No research is cited to support this claim. Miller and Commons (2010, p. 10) suggest "If crying is only allowed to occur rarely, it is unlikely to be reinforced" and "a complete functional analysis of crying" is needed to understand when and in what situations a cry is likely to be reinforced when responded to.

Psychological benefits of attachment parenting.

Miller and Commons (2010, p. 10) suggest attachment parenting practices "prevent damaging long bouts of crying" and "mitigate other emotions in response to stressful situations". The research they cite to endorse this proposition does not include attachment parenting practices specifically, and the research, including McEwen and Seeman (1999), Gunnar (1998), Gunnar, Broderson, Kruegar, and Rigatuso (1996), pertains to populations, who are exposed to chronic stress, high amounts of cortisol, and early traumatic experiences.

Attachment security and attachment parenting practices.

Miller and Commons (2010) report on research regarding sensitivity and secure attachment and then state that none of the research they have mentioned measured attachment parenting behaviours specifically. The only research they do include is on the behaviour of carrying and attachment and cite Anisfeld et al. (1990), which is reviewed above. They also cite cross cultural

literature on co-sleeping and attachment (True, Pisani, & Oumar, 2001; Takahashi, 1990; Rothbaum et al., 2000; LeVine & Miller, 1990). True et al. (2001) studied 27 mother-infant dyads from the Dogan ethnic group of Mali and found the distribution of attachment between the infants who were secure 67%, avoidant 0%, resistant 8% and disorganised 25% following the Strange Situation Procedure assessment. Dogan childrearing practices, including co-sleeping, are discussed alongside True et al.'s findings. Rothbaum et al. (2000) and Takahashi (1990) discuss the comparisons between attachment security in Japan and the United States and question the cultural relativity of the Westernised psychology of attachment and its fundamental principles in non-Western cultures. Again childrearing practices are discussed, including the greater frequency of co-sleeping in Japanese culture.

Summary of findings.

Miller and Commons' (2010) paper on the benefits of attachment parenting practices provides no evidence that co-sleeping is beneficial to infant sleep development. They cite three research articles in which carrying is somewhat associated with less crying, but not the amounts of unsoothable crying. However, three additional studies, not found in Miller and Commons (2010), found no significant reduction in crying with more carrying (St James-Roberts et al., 1995; Barr et al., 1991; Walker & Menahem, 1994). Five of these studies on the effect of carrying on reducing crying were conducted in the first 12 weeks of life prior to the developmental stage when crying can be reliably measured. No research was provided that showed a higher degree of parental responsiveness mitigates crying and, furthermore, nor was evidence provided about its reinforcement, as was postulated by Miller and Commons (2010). They do cite research conducted on clinical populations that attachment parenting practices prevent damaging bouts of crying. Finally, they report that it has not been empirically shown that attachment parenting

practices create secure attachment. There is no research that has provided evidence that attachment parenting practices lead to an infant having a secure attachment classification and there is no research that has found bed-sharing enhances infant attachment relative to not bed-sharing.

Question: Can a Sleep Intervention Cause an Increase in Cortisol Levels that will Affect an Infant's Typical Development?

Research cited by the parenting resources.

Many sources reference Price et al. (2012) explained above and Middlemiss et al. (2012) discussed in the following section. Both studies used salivary cortisol as a measure of stress and both studies involved sleep interventions. Sources referenced them depending on the stance of the argument. Those who claim that behavioural sleep interventions are damaging to an infant's development cited Middlemiss et al. (2012) and some of those also condemned Price et al. (2012). An example of the way this is portrayed in the parenting resources is the citation of Middlemiss et al. (2012) as evidence that behavioural sleep interventions impairs attachment of infants to their mothers. An article on www.evolutionaryparenting.com (Cassels, n.d.-g, para 8) argues

by day three, the level of synchrony between mom and baby had decreased during daytime ... this lower synchrony may result in worse attachment, particularly from the infant's point of view as the manner in which infants affect mom's cortisol is by signalling (or crying) and if they have stopped because they feel mom won't respond, it should come as no surprise the attachment should be affected.

Evidence-based research findings.

A literature review was carried out using the terms *cortisol* and *infant sleep* and 52 research articles were found of which three were relevant.

Gradisar, et al. 2016) measured stress in 43 infants aged 6-16 months during their research into the effects of graduated extinction, bedtime fading, and a sleep education control group. Infant stress was measured on two consecutive days during the intervention phase, by taking morning and afternoon salivary cortisol samples. Between pretreatment and 12 month follow-up the graduated exposure group showed a small decline in morning cortisol, the bedtime fading group showed a moderate decline, and there was no change for the control group. The morning cortisol changes were not statistically significant, but the afternoon cortisol changes were significant. The graduated extinction group showed a large decline in afternoon cortisol, the bedtime fading group showed a moderate decline in afternoon cortisol and the control group showed a small decline. They concluded from these cortisol samples that no adverse stress responses were shown as the levels remained within normal limits and did not result in the levels needed for hypothalamic-pituitary-adrenal dysregulation. In fact, any change was in the opposite direction. Sleep data collected from a 7 day sleep diary and infant-worn actigraphy showed infants within the graduated extinction group demonstrated large decreases in sleep latency and the number of awakenings. The researchers highlighted that further research would benefit from cortisol sampling during the evening when the sleep interventions are being instigated.

Price, Wake, Obioha, Ukoumunne, and Hiscock (2012) executed a six year follow-up study on the Infant Sleep Study conducted by Hiscock et al. (2007). The original study involved families of 328 infants aged between 8 to 10 months who had been reported as having infant sleep

difficulties. The intervention group received information on positive bedtime routines and were taught either controlled comforting or adult fading, depending on parental choice. The results from the intervention group showed fewer sleep problems at age 10 months and 12 months compared to the control group and also showed a reduction in maternal depression at 2 years.

Of the 326 original families 225 chose to participate in the 6 year follow-up. The follow-up data collection included results from the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997); Child Sleep Habits Questionnaire Short Form (CSHQ) (Owens, Spirito, & McGuinn, 2000); Child-Parent Relationship Scale Short form (CPRS) (NICHD-ECRN – National Institute of Child Health and Human Development - Early Childhood Care Research Network, 2004); a study-designed global rating five point item (“How would you rate your current relationship with your child”); 5 item disinhibition attachment interview (Chisholm, 1998); Depression Anxiety Stress Scale (DASS) (Henry & Crawford, 2005); the Pediatric Quality of Life Inventory (PedsQL) (Varni, Seid & Rode, 2001); 11 items on parenting styles; and a single item on perception of sleep all taken from the Longitudinal Study of Australian Children (Varni et al. (2001); and finally children’s cortisol samples were taken twice during one day to try to capture abnormal profiles, for example, *hypo* (starts low and continues low) or *hyper* (starts high and continues high). The results from the cortisol sampling showed similar amounts of abnormal cortisol profiles in the intervention and control groups. The researchers concluded that at 6 years of age there are no harmful nor beneficial long lasting effects on child, child-parent, or maternal outcomes. As a consequence, they conclude behavioural sleep techniques are safe to use following these results 5 years post-intervention.

Middlemiss et al. (2012) conducted a study of 25 infants aged 4 to 10 months over 5 days in an inpatient hospital setting. Mothers were referred because of reported difficulties with their infant's ability to self-settle, sleep routine, or concerns around feeding and physical growth, by the general practitioners, midwives, or other medical based practitioners. The stated goals of the programme "were to help mothers teach their infants to self-settle at naptime and night-time transitions to sleep and to re-settle themselves at nighttime". Nurses implemented an unmodified extinction sleep programme and provided all night-time care although mothers were able to hear their children from their rooms. Mothers would prepare the infants for transition including night-time bathing, feeding, and were responsible for their infant's daytime care which was undertaken within and around the hospital facility. Mothers were able to discontinue their participation at any stage.

During the first and third day of the intervention both the infant's and the mother's salivary cortisol was collected at initiation of the infant's sleep routine and then again 20 minutes after the infant's sleep onset. For all collection times, infants, and mothers, levels were within the normal range and therefore not indicative of enhanced stress. The means provided by the researchers fall easily within the normal range of ND - 2.734 ($\mu\text{g/dL}$) (Salimetrics, 2016). This is something that Middlemiss et al. (2012) fail to report.

Inaccurate and concerning conclusions were drawn from the little data that that were reported in this research article. For instance, it was reported that on Day 1 of the intervention the mothers' and the infants' physiological stress was attuned at both sampling times (prior to sleep routine and then 20 minutes after the infant went to sleep). But, by Day 3 the infants' cortisol remained around the same level as Day 1 compared to their mothers' which had dropped. The researchers

report this displayed asynchrony of mother-infant hypothalamic-pituitary-adrenal axis activity. In the introduction to the article the researcher informs readers that “synchronous interactions are also foundation to the development and maintenance of a secure mother-infant attachment” (p. 227). The authors of the study make reference to findings from Isabella and Belsky (1991) on the synchronous interactions between mothers and their 3 and 9 month old infants as predictive of secure attachments at 1 year of age; however, Isabella and Belsky (1991) were investigating mother-infant dyads interacting in well-timed, mutually rewarding, and reciprocal manner, that is, nothing to do with synchronous cortisol interactions, as Middlemiss et al. (2012) are alluding to. There is no research to date that shows cortisol synchronous interactions are precursors or play a role in maintaining of secure infant attachment.

Furthermore, Middlemiss et al. (2012) conclude that although an infant has stopped signalling distress because they had learnt to self-soothe the “infant’s physiological response to the self-settling experience had yet to habituate”. It is imperative to highlight that the infant’s physiological response was within the range of normal cortisol levels at each collection point and was not indicative of stress, as the authors argue.

Other conclusions reached by Middlemiss et al. (2012) that highlighted the positive effect of sleep interventions included that by the end of the third day “all infants settled to sleep independently without a bout of distress signalled through crying” (p. 230). They also reported that it is plausible that sleep intervention increased the mother’s confidence in their infant’s night-time care which in turn had a positive effect on maternal stress levels. Moreover, Middlemiss et al. (2012, p.231) highlight the predicament that mothers “present after a long period of difficulty in establishing a sleep routine with their infant”. Previous approaches may

have resulted in “both maternal non-responsiveness to signalling of distress, as well as parental presence during infants’ transition to sleep following lack of success in teaching infants to self-settle. Thus, infants would have experienced the transitions to sleep as mixed in terms of maternal responsiveness” (Middlemiss et al., 2012, p. 231). Finally, the researchers conclude that “as novel and unfamiliar experiences are introduced into children’s lives there may be periods or episodes of asynchrony punctuated by longer period of synchrony” (Middlemiss et al., 2012, p. 231).

Summary of findings.

Two studies have investigated infant stress for a period of a behavioural sleep intervention from cortisol collection and analysis. One collected infant cortisol during the morning and afternoon while families followed a graduated extinction, bedtime fading, or sleep education intervention. Cortisol levels decreased and never elevated to a level likely to cause hypothalamic-pituitary-adrenal axis (HPA) dysregulation. The second study measured night-time cortisol at initiation of an unmodified extinction intervention and 20 minutes post infant sleep. The data showed that infants’ cortisol did not match that of their mothers on the two collection days of the 5 day intervention. It should not be expected to and infants mean cortisol level did not reach amounts that would cause HPA dysregulation. Finally, a five year follow-up on a behavioural sleep intervention study investigated stress by cortisol sample and analysis. They concluded from their data that behavioural sleep techniques showed no association with lasting effects were shown via cortisol and other measures. Importantly, all three studies showed behavioural sleep interventions resulted in decreased night waking and latency and increases in infant sleep.

Question: Are any of the Interventions Proposed by the Parenting Resources Evidence-Based?

Research cited by the parenting resources.

With respect to proposed interventions, no research is cited by any of the sources. While co-sleeping is cited by attachment parenting sources as an intervention for sleep disturbance there is no research in support of this. Reactive co-sleeping is used by many families to get some sleep, but no evidence is found for *wearing* down (wearing your infant in a sling or carrier until they sleep) or feeding to sleep as proposed by some parenting sources (Sears et al., 2005) as interventions for ISD.

Evidence-based research findings.

A literature review was carried out using the terms *infant sleep* and *intervention* that found 393 research articles, of which none were relevant research for other interventions for ISD. Articles that were not relevant included interventions for decreasing the risk of SIDS and research on interventions on improving children's sleep that were not in the infant age range.

There is research into ways in which parents can promote infant sleep, for example, activities such as night-time bathing, baby massage, and a darkened environment are promoted and advised in the research as good sleep hygiene. As stated above psychoeducation on the development of sleep and expectations has also been shown to facilitate improved infant sleep. Limited research suggests white noise, especially when coupled with bedtime routines and schedules, may help sleep onset and night waking (Borkowski, Hunter, & Johnson, 2001; Forquer & Johnson 2005; Cautilli, 2005). And there is research that swaddling helps to create infant sleep efficiency (Franco et al., 2005; Richardson, Walker, Horne, 2010; van Sleuwen, et al., 2007; Blom, van Sleuwen, de Vries, Engelberts, & L'Hoir, 2009).

Question: Can Infants Grow Out of Sleep Difficulties Without Intervention?

Research cited by the parenting resources.

Two sources, namely Mindell (2005) in *Sleeping through the Night* and Weissbluth (2003) in *Healthy Sleep Habits Happy Child* do not directly cite research, but they claim studies show that most babies with sleep problems at one year of age will still have sleep problems at four years of age if nothing is done.

An article on www.isisonline.org (Infant Sleep Information Source, n.d.-a, para. 11) states that infants “developmentally they will grow out of it” and go on to report a “small number of studies which have conducted long-term follow-up of behavioural interventions support this”.

Unfortunately, they do not say what studies these are.

Evidence-based research findings.

A literature review was undertaken using the terms *infant sleep problems*, *persist*, and *ongoing* finding 25 research articles of which four were relevant.

Wake et al. (2006), in a longitudinal study of 483 first-born infants, collected data from caregiver questionnaires from the age of 2 weeks through 2, 4, 8, 12, 18, and 24 months of age. They specifically collected data on sleep problems at age points 8, 12, 18, and 24 months. They concluded that sleep problems were more commonly transient rather than persistent and the prevalence of sleep problems decreases from 45% of infants in the first year of life to only 15% by 2 years of life. Zuckerman, Stevenson, and Bailey (1987) concluded in a longitudinal study of 308 preschoolers that of the children in their study, who presented with sleep problems at 8 months of age, 41% still had difficulties at 3 years of age. Of the children without sleep problems at 8 months of age, 26% had difficulties with sleep at 3 years of age.

Two studies concluded that sleep problems persisted if parental involvement at sleep time did not decrease. Tikotzky and Shaashua (2012) collected data on 71 preschoolers in a follow-up to the longitudinal study by Tikotzky and Sadeh (2009). They reported that higher levels of parental bedtime involvement at 4 years of age was associated with sleep problems. A second study (Johnson & McMahon, 2008) examined parent-reported questionnaires of 110 preschoolers (M age =3.81). They found sleep problems at preschool age were predicted by a greater number of parental interactions at bedtime.

Summary of findings.

The limited research available suggests that sleeping problems do persist beyond the first year of life although the amount of infants with sleep problems decreases. Many factors may influence the persistent of sleep difficulties. Two studies found that parental involvement at sleep times was associated with longitudinal sleep difficulties especially if parental involvement is not decreased.

Overall Chapter Summary

The current chapter set out to investigate information pertaining to 11 questions about infant sleep difficulties and intervention for it that emerged for the categories in Chapter Two. By exploring evidence-based research both referenced by the authors of parenting resources and research acquired through literature reviews conducted by the researcher. The following chapter discusses each category in light of the information that emerged in Chapter Two and Three along with methodological issues, limitations, and strengths of this thesis.

Chapter 4

The aim of the present study was to explore and evaluate the information presented in books and websites available to parents of infants with regard to infant sleep and interventions for ISD. The objective was pursued by examining the degree of agreement and discrepancy between advice given in various information sources and the evidence available from research. The result was to highlight many instances likely to confuse parents as a result of claims made by various parenting resources that lack research evidence. Categories of parenting advice were determined by a content analysis. The advice was set against research evidence. Unfortunately, evidence-based research that was cited in the parenting resources was limited and often misleading or exaggerated.

Systematic literature reviews were also carried out. In these I addressed some of the questions that emerged from the parenting resources claims. The questions generated and the findings of the literature reviews are outlined in the previous chapters and summarised below.

Comparing the Findings with Existing Evidence-Based Literature

The results of this study are discussed following the ten categories that emerged:

- breastfeeding and infant sleep,
- responsiveness at sleep times,
- attachment and infant sleep,
- co-sleeping and infant sleep,
- attachment parenting perspective,
- infant sleep, efficacy of behavioural sleep interventions,

- claims behavioural sleep interventions affect attachment,
- claims behavioural sleep interventions affect cortisol levels and brain development,
- claims regarding alternative interventions,
- claims infants will grow out of Infant Sleep Disturbance (ISD) without intervention.

Category 1: Breastfeeding and infant sleep.

Two questions were generated from the investigation into quotations claimed in the parenting resources about breastfeeding and infant sleep. The first question to emerge was - can breastfeeding affect infant sleep development? The parenting resources statements mimic what research has found. Both in the sources, and in the research, breastfeeding after six months for self-soothing purposes at sleep onset is proposed as a key feature negatively affecting sleep development. The literature review of evidence-based research identified eight studies that found an association between breastfeeding and waking more frequently throughout the night. Two studies found no association and two studies found sleep difficulties lessened over time for breastfeeding infants.

The second question generated was - could a behavioural sleep intervention affect breastfeeding? The parenting sources writing on this topic were at polarised opposites claiming either, yes it would, or no it would not. Unfortunately, at present no evidence-based research has reported breastfeeding data during a sleep intervention. This may be because it is not seen as important data to report because it is expected that infants who are breastfed will continue to breastfed.

Category 2: Parental responsiveness at infant sleep times.

The parenting resources promote immediate, differential, individualised responding calibrated depending on the circumstances each family faces at night time. Those who promote immediate responding propose that attending to an infant crying almost immediately helps with the child returning to sleep. They claim “*being present and attending to infants when they wake and cry can help infants return to sleep*” (Attachment Parenting International, n.d.). Those who promote differential responding propose waiting to see if an infant is fussing and still asleep or will re-settle themselves on their own.

The question that emerges from the confusion of the parenting resources is how do parental factors promote infant sleep development? The literature review found from the evidence-based studies that the majority showed the more intensive and physical the comforting behaviour the greater the sleep difficulties. A wait period before responding was beneficial to sleep development and in one study it was found the consistency of how a parent responded rather than the frequency was more beneficial. One of the cornerstones of attachment theory is consistency of sensitive care and consistency of responsiveness of the parent to their infant. Unfortunately, as can be seen from the quotations reported in Chapter Two these key terms from attachment theory appear to be misinterpreted and misused by some of the parenting resources when discussing the optimal way to respond to an infant at sleep times. This leads the authors to make incorrect claims about the association between responding at sleep times affecting the attachment relationship.

The significance of responsiveness and sensitivity in the development of the attachment relationship comes from the work of Ainsworth, a developmental psychologist, who worked with

Bowlby in the 1950s. While Bowlby was responsible for the beginnings of, and many future contributions to, the theory of attachment it was primarily Ainsworth who developed the theory into a more contextual one, in other words, taking attachment from a theory to something that was measurable. She also highlighted the importance of maternal sensitivity and responsiveness in developing secure attachment. Ainsworth et al. (1971) saw maternal sensitivity as a mother's ability to perceive things from her child's point of view. Central to this ability was that she saw her child as a separate person, respected her child's independence, and responded in a way to not interrupt her child's activity-in-progress.

Hubbard and van Ijzendoorn (1991, p. 310) refer to the concept of *differential responsiveness* and state that Bowlby himself “did not think it necessary for mothers to react promptly to all crying behaviour”. They found that by responding differentially to non-distressed cries decreased crying in infants over time compared with responding non-differentially. By attending appropriately to the distressed cries and not reinforcing the non-distressed cries mothers taught their infants to cry when required (Del Vecchio, Walter & O’Leary, 2009). Parental responsiveness at infant sleep times should be viewed in light of this research, which behavioural sleep interventions already do.

Category 3: Infant attachment and development of sleep.

Some parenting resources proclaim that the “process - attachment is a behavioural system that operates twenty-four hours a day, even when your baby is asleep, which could be (with luck) up to 60 percent of the time” (McKay, 2006, p. 4). Statements such as these and other misinformation on attachment highlight the need for parents, and those authoring advice, to be

educated on the theory infant attachment classifications are based on and in turn the attachment patterns that infants exhibit.

Ainsworth and colleagues described organised patterns of attachment as

Secure, which is identified as Category B (the infant shows signs of missing the parent upon separation, greets the parent actively upon reunion, then settles and returns to play); Insecure-avoidant, which is identified as Category A (infant shows little or no distress at separation from parent and activity avoids and ignores the parent upon reunion); and insecure-ambivalent/resistant, which is identified as Category C (the infant is highly distressed by separation and seeks or signals for contact on reunion, but cannot be settled by the parent and may show strong resistance) (Ainsworth, Blehar, Waters, & Wall, 1978 cited in Main & Solomon, 1990, p. 121).

With growing evidence from researchers working with maltreated children during the early 1980s it became clear that there needed to be another category of attachment for those children that were not fitting into the three categories Ainsworth developed. These children were seen to have little organisation to their behaviours when being observed in the Strange Situation Procedure (Main and Solomon, 1990). Hesse and Main (2006) suggest that when an infant is frightened by their primary attachment figure/secure base it is expected that he or she will display disoriented/disorganised behaviour. The particular behaviours that children who fit in the Category D display when dealing with the stress of the Strange Situation Procedure are best described by Main and Solomon (1990, p. 121), “they include one or more of the following features: disordering of expected temporal sequences; simultaneous display of contradictory behaviour patterns, incomplete or undirected movements and expressions, including stereotypes;

direct indices of confusion and apprehension; and behavioural stilling”. From this informed stance of attachment classifications parents can independently weigh up whether they believe an infant’s attachment affects their sleep development or whether an infant’s sleep development is affected by the infant’s attachment.

Another concept from attachment theory that parenting resources allude to and appear to misinterpret is a child’s *internal working model*. Bowlby (1977) proposed that the internal working model helps explain how experiences in early attachment have lasting effects throughout an individual’s life, both in their later capacity to form attachments, and also in the development of psychological dysfunction including depression, anxiety, and emotional detachment. The idea of the internal working model of relationships is to explain the concept of how infants unconsciously internalise representations of themselves in relation to others. The model helps the infant predict responses of others and works as a blueprint for future relationships. Although not stagnant, and influenced by new experiences, this type of cognitive model allows children to view new experiences with others in light of previous experiences. The internal working models of children classified A, perceive the self as unloved but self-reliant and sees others as rejecting and intrusive. Children classified B, perceive the self as loved, autonomous, competent, and effective, and see others as dependable, available, and co-operative. Finally, children classified as C, perceive the self as dependent, ineffective and have low sense of self-value, and also see other people as unpredictable, insensitive, inconsistent, and unreliable (Howe, 2011). It is important to remember that all three of these groups are using attachment behaviours that are successful, organised strategies for gaining and sustaining proximity to their caregivers. Although their attachment behaviours are different they are still all attached to their caregiver (Music, 2010). The attachment behaviours show the infant’s ability to adapt and stay

close to their attachment figure for the best chance of survival. Howe, (2011, p. 46) points out that Bowlby himself stated that as long as the attachment strategies were organised then individuals were able to have functional relationships with others. However, the internal working model of the disorganised child sees itself as alone, frightened, dangerous, ignored and unloved and sees other people as unavailable, frightening and rejecting (Howe, 2011, p.46).

Most studies retrieved in the literature review of infant attachment classification and its association with infant sleep found that children displaying insecure-ambivalent/resistant (C) attachment exhibited more night wakings and longitudinal studies reported those with secure attachments woke less. In light of the description of how infants with insecure-ambivalent/resistant attachment (C) exhibit behaviours within the Strange Situation Procedure (highly distressed by separation, signals for contact on reunion but is difficult to settle) it is not surprising that the literature review found infants within this category exhibited increased night wakings. Given the description of their internal working model (perceive the self as dependent) it would be interesting to see future longitudinal studies on sleep difficulties and attachment classification. Because infants do not establish their attachment by themselves a caregiver's parenting is also responsible for the attachment pattern the infant develops. This is important for the current thesis because the same mechanisms that produce an insecure-ambivalent/resistant attachment (C) attachment pattern over time could also establish sleep problems in infants; for example, parents with an anxious attachment are more likely to have an intrusive parenting style.

Category 4: Co-sleeping and infant sleep.

Some authors of parenting resources are opposed to co-sleeping and state that infants should be put in their own bed, in their own room, as soon as possible; others are opposed to bed-sharing

and advocate for room-sharing; while yet others advocate for bed-sharing. The questions that emerged from the information provided by the resources were - do solitary sleeping infants sleep better than bed-sharing infants, and are outcomes more favourable for those infants who bed-share compared to infants who do not?

As referenced in Chapter Two resources that advocate for bed-sharing, claims are made about the benefits for example “enhanced attachment”, “parental fulfilment”, “infants who cry less”, “happier”, “easier to control”, and “long-term mental and physical wellbeing”. None of these claims are supported by evidence-based research. Most of the studies in the review found that compared to solitary sleeping infants bed-sharing infants woke more, even in the studies where the daily total amount of sleep was similar.

Two difficulties arise when interpreting the research into infant sleep quality and co-sleeping. One is that the definition of co-sleeping is not always stated. In some research solitary sleeping is the infant still within the same room as their parents whereas this is classified as co-sleeping in other research. The second difficulty with interpreting the research is the difference between what is actually being measured in the studies. Some studies compare maternal-reported sleep diaries/logs/questionnaires as well as actigraphy data. Unfortunately, this is a difficulty in the design of the studies because maternal reports measure infant behaviour around awakenings (especially signalling) and actigraphy measures infant movements, translated, by algorithm, into sleep states. Actigraphy does not differentiate awakenings accompanied by signalling from arousals followed by resumption of sleep. This makes interpretation difficult because they are reporting on different behavioural patterns.

Evidence-based research has not found that co-sleeping/bed-sharing infants developmental/physical wellbeing that is superior to that of solitary/room-sharing infants. Studies that reported on cortisol levels following stressors (inoculations and the Strange Situation Procedure) found no evidence that co-sleeping prevented changes in cortisol levels. One study that found a difference between co-sleeping and solitary sleepers and infants' cortisol levels following the Strange Situation Procedure classified co-sleeping as both bed-sharing and room-sharing and concluded the longer the time spent co-sleeping the less cortisol response (Beijers, Riksen-Walraven and de Weerth, 2013). There is no evidence that bed-sharing/co-sleeping enhanced postpartum bonding or secure attachment. These are results that parents who feel guilt for not bed-sharing need to digest. Longitudinal studies would be welcomed that encompassed all three infant sleeping groups: bed-sharing, in room co-sleeping, and solitary sleeping (in a different room), and included attachment, behavioural outcome, and mental health measurements.

Category 5: Attachment parenting and infant sleep.

Some authors of parenting resources allude to the fact that attachment parenting has attachment theory and research supporting its claims. For example, “*according to attachment researchers, the consequences of this parenting style are fewer behavioural problems and mental disorders, less social misconduct, a greater ability to form lasting adult relationships, and improved overall health*” (Folden-Palmer, 1999, para 13 in www.bawlingbabies.blogspot.co.nz). These statements are unfounded. Attachment theory encourages sensitivity and consistency in parenting to help infants attain cohesive (A, B, or C) rather than disorganised (D) attachment patterns. As discussed in the section on attachment and infant sleep the terms sensitivity, responsiveness, and consistency are often misinterpreted by authors of parenting advice.

Possibly a good medium position between the extreme attachment position and those who advocate for the importance of infants developing independent skills is a section in the Miller and Commons (2010) critique of attachment parenting practices. They postulate that attachment parenting practices need to be used in a *sensitive fashion*. They define *sensitive fashion* as parents needing to change their practices as their infant's development changes in mobility, communication, feeding, and exploration needs. This means that parents need to respect their child's other areas of development and be flexible with attachment parenting practices, e.g., allowing an infant space to explore, not wearing an infant in a sling when they want to explore, and not bed-sharing when the child wants to sleep independently. One could argue that being flexible to a child's changing developmental needs is not an attachment parenting concept but rather it is just a way to conceptualise "good parenting". It is difficult not to incorporate this idea into infant sleep development. There are times for the attachment system, times for the exploratory system, times for self-soothing and, certainly, times for sleep development. Caregivers who are attuned and sensitive to their child's capabilities and development promote emotional security, social competence, and autonomy (Belsky, 1984).

Authors of attachment parenting resources possibly come up with the notion that their parenting practices will support better outcomes for their children because they confuse the attachment theory concept of internal working models as stemming from their style of parenting. Howe (2011, p. 35) concludes that internal working models "contain expectations and beliefs about (1) one's own and other people's behaviour; (2) the lovability, worthiness and acceptability of the self; and (3) the EA and interest of others, and their ability to provide protection". Again, as discussed above, in attachment and infant sleep a parent's caregiving is one of the major influences on internal working models. There is confusion in the parenting resources about what

caregiving is optimal. This confusion lends itself to further research investigating attachment parenting caregiving practices and their outcomes on infant attachment patterns and internal working models.

The question that arose from this category were - what are attachment parenting practices and do attachment parenting practices produce better outcomes for children? No evidence-based research given by the parenting resources was found to support the claims made and the literature found no research that supported the claim that attachment parenting practices produced better outcomes for children.

Category 6: Efficacy of behavioural sleep interventions.

Although efficacy of behavioural sleep interventions became a category because it was discussed in almost every parenting resource it was important to document claims with regard to if, and how, the interventions work. A few parenting resources questioned the longitudinal nature of the intervention outcomes and others that stated that infants were not necessarily leaning to self-soothe or sleep but just to not signal, but all sources agreed that interventions are successful at helping infants at sleep onset. No question was generated from this category. The biggest difficulty with this category was the definition of behavioural sleep intervention. While some authors reported on crying-it-out, camping out, and such like, other authors either advocated or opposed non-evidence-based watered down, uninformed variations of graduated exposure and parental presence. None of the parenting resources that discussed a behavioural sleep intervention commenced with the support of a clinician who is trained in behaviour theory and the strategies that form an evidence-based behavioural sleep interventions. Again this misinterpretation by the authors of these parenting resources blurs lines for the parents reading

their publications and made measurement difficult for this thesis because the literature review investigates behavioural sleep interventions based on behaviour theory concepts of extinction or derivatives from it.

Category 7: Behavioural sleep interventions and attachment.

A number of parenting resources claimed that undertaking a behavioural sleep intervention would/could affect an infant's attachment to their caregiver. For example, "*the cry-it-out approach undermines the very basis of secure attachment, which requires prompt responsiveness and sensitive attunement during the first year after birth*" (Solter, 2004, para.18, cited in www.bawlingbabies.blogspot.co.nz/quotesfromvariousdoctors). And

Sleep training poses a further threat to the attachment relationship by effectively training caregivers to desensitise themselves to their baby's cues. It is not only the baby who is at immediate risk from them, but the caregiving system as well.

(Centre for Attachment, 2006a).

Many parenting resource authors use the term *attachment* to encompass a plethora of meanings including relationship, bonding, and dependency. Moreover, attachment is often used to describe people's relationships with one another as being weakly or strongly attached to one another. This is not, however, what Bowlby was intending in his theorising on infant-mother attachment. All of this misinterpretation on the part of authors may escalate the guilt of caregivers who read this material. Given that their infant's distress ignites the parent's attachment caregiving system, which in turn motivates them to protect their offspring, it is no wonder that for many caregivers separation and their perceived thought of their child in distress at being put to bed brings out an array of emotions (guilt, distress, anger). Bowlby himself clarified the distinction between attachment behaviours and having an attachment to someone, something he felt he had failed to

do in his early formulations of the theory (Bowlby, 2012). Attachment behaviours are behaviours that happen in times of heightened stress or fear, and their purpose is to maintain proximity to an individual who the infant perceives as more competent at dealing with the world. Having an attachment to an individual on the other hand is having a strong predisposition to seeking proximity and contact with the individual with whom you have the attachment. Bowlby (2012, p.31) describes this disposition as “an attribute of the attached person, a persisting attribute which shows changes slowly over time and which are unaffected by the situation of the moment”. This difference becomes an important focus when thinking about any behavioural sleep interventions effect on attachment. During an intervention period of 5-10 days an infant may cry for a period of time over a number of nights and this is a need to have a caregiver close. But can it change an infant’s attachment to their caregiver who provides a *secure base* and are a source of *felt security*. A secure base is a concept created by Bowlby and Ainsworth. The argument behind a secure base is that if a caregiver’s whereabouts is known, then attachment behaviours cease and exploratory behaviours increase. The child is happy to explore as long as there is a base to come back to when they are frightened or tired (Bowlby, 1977).¹ The internalisation of the secure base is a source of *felt security* that remains throughout an individual’s life (Hock & Schirtzinger, 1992).

Both of these constructs are what produces a “persisting attribute which changes slowly over time, which is unaffected by the situation of the moment” (Bowlby, 2012, p.31). Another point that is often left out of the parenting resources is that attachment security is only one feature of infant development and it is only one of a number of factors that contribute to parent-child relationships (Dunn, 1993; Rutter, 1995). That the other detail that is often overlooked is attachment classification is only one factor in a multi-risk development of psychopathology

(Sroufe, 1997). Given this understanding of attachment it is unlikely a brief behavioural sleep intervention can affect it. Caregivers deserve clarity around these meanings because it is likely to affect their views on intervention. The literature review undertaken for the question “Can a behavioural sleep intervention affect attachment?” found no evidence that it would or could affect attachment. Unfortunately, both the parenting resources and research papers sometimes confused measured concepts, such as bonding, and longitudinal attachment classifications. Further studies are needed as discussed below.

Category 8: Sleep interventions and cortisol.

Many parenting resources claimed that sleep interventions could result in infant cortisol levels (as an index of stress) that are harmful to an infant’s development. Scaremongering statements such as:

when sleep is entered into in this fashion, it is not peaceful sleep earned by a process of self-soothing, nor has the baby finally grasped self-settling skills. This is instead the second phase of the stress response...entered a stage of dissociation. When our bodies are too flooded with stress they have to shut down
(Centre for Attachment, 2006c, para 13).

And

Cortisol (a hormone secreted during stressful situations, such as crying-it-out)... makes you more prone to the bad effects of future stress, it makes you more prone to mental illness and makes it hard to recover from stress (Gordon & Goodavage, 2002, p. 97.)

The question that emerged from such statements was “Can a sleep intervention cause an increase in cortisol levels that will affect an infant’s typical development?” No resources cite studies where data have been collected that provides evidence for these claims. The misuse of normal limits of cortisol and what equates to an experience of trauma is a deceptive aspect of the resources.

Cortisol is a glucocorticoid hormone by-product of the HPA axis. It is produced in the adrenal cortex and is released in response to stress. Before three months of age infants do not display the typical diurnal pattern of an early morning peak in cortisol levels that decreases during the day with minor stressors raising cortisol levels. Compared with their mothers, 5 to 8 month old infants have been found to show large intra-individual variability (de Weerth & van Geert 2002). Basal cortisol levels decrease over the first year of an infant’s life. Salivary cortisol concentrations are assessed pre-stressor and post-stressor to assess reactivity in the HPA. Jansen et al. conducted a review in 2010 and found that infants had stronger cortisol reactivity to painful and mild physical-stressor paradigms compared with maternal separation-stressor paradigms. Gunnar et al. (2009) also conclude that psychological stressors (short mother-infant separations, anger/fear/novelty experiments) for the most part, do not invoke cortisol reaction, irrespective of the infant’s age.

Traumatic or chronically stressful experiences in infancy and childhood, such as the ones described below by Shonkoff et al. (2012), can result in constant or over-activation of the HPA. Prolonged activation of the HPA axis during sensitive periods of development can result in adversely affecting brain architecture and other developing systems. The extent to which the traumatic experiences have lasting adverse effects are determined by an individual’s genetic

predisposition and the availability of a consistent loving relationship with a caring adult. It may also depend on the context, duration, intensity, and timing of the traumatic experience.

Some activation, however, of the stress response system is normal and is good for development. A conceptual taxonomy has been proposed by the USA-based National Scientific Council on the Developing Child (2012) cited in Shonkoff et al, (2012) which distinguishes the three physiological responses to stress during infancy and childhood: *positive*, *tolerable*, and *toxic*.

- Positive stress response is part of healthy typical development. It is characterised by brief increases in heart rate and mild elevations in hormone levels. When the stress is encountered in a supportive relationship with a caregiver and a stable environment it is an opportunity to learn and practice adaptive responses to unpleasant situations. Situations that may trigger a positive stress response are receiving an immunisation injection or dealing with frustration.
- Tolerable stress response occurs in association with non-normative experiences that create a larger, longer degree of adversity or threat. It activates the body's alert systems to a greater degree that if not time limited or buffered by a protective relationship with a caring adult could result in excessive activation of the system that can lead to physiological harm and long-term difficulties for learning and health. Examples of tolerable stress include a serious illness, the loss of a family member, or a natural disaster.
- Toxic stress response can occur when a child experiences frequent, and/or prolonged adversity. Without the protective relationship providing adequate adult support the prolonged activation of the stress response may disrupt development of brain architecture

which can result in anatomic changes and/or physiologic dysregulations and may have lifelong effects on physical and mental health including cognitive impairment and stress related disease. Examples of experiences that can produce toxic stress include neglect, physical and emotional abuse, and caregiver mental illness and/or substance abuse (Shonkoff et al., 2012).

With this in mind it is difficult to see how researchers such as Middlemiss et al. (2012) are able to publish claims that behavioural sleep interventions affect cortisol levels to a dangerous level especially as was found in their case the infant's cortisol levels on day three of a sleep training programme were still within the normal range. Or that parenting resources discussed in Chapter Two and Chapter Three are able to claim that a sleep intervention could equate to an experience of trauma. Price et al. (2012) and Gradisar et al. (2016) both reported that behavioural sleep interventions did not result in adverse stress responses as cortisol levels remained within normal limits following intervention. Studies are needed that report on individual cortisol levels in infants before, during, and after behavioural sleep interventions unlike the study data reported by Middlemiss et al. (2012).

Category 9: Alternative interventions for infant sleep disturbance.

Parenting resources cite many differing suggestions/interventions for sleep difficulties, for example, Sears et al. (2005) postulates ideas such as feeding, rocking, or wearing down in a sling. Further, whole books are dedicated to sleep plans/interventions which claim to help a child sleep. No evidence-based interventions are cited by these sources. Often the sleep plans advocated for resemble behavioural sleep strategies: for example, Jo Frost in *Confident Baby Care* (2010) promotes her own controlled crying technique which resembles graduated exposure

as does Alison Scott-Wright's *The Sensational Baby Sleep Plan* (2010). As has been discussed before these strategies are hard to maintain without the support of a clinician, for without that support there is the potential to cause both the infant and the parent confusion and ongoing difficulty. The literature review found no other evidence-based interventions for ISD. And results from the Sadeh, Tikotzky, and Scher (2010) literature review reported the persistent finding of research that significant night-time involvement (being held, rocked fed, etc.), which is advocated for by some of the authors led to greater infant sleep problems compared with those infants who fell asleep with minimal parental assistance.

Category 10: Infants grow out of sleep disturbance without intervention.

The parenting resources are divided on this category. A number claim that infants will grow out of sleep disturbance/difficulties just as a function of ageing. For example, "*children will sleep through the night at their own pace*" (Cassels, n.d.-4, para 20) and "*in most cases, however, children will learn to fall asleep by themselves when they are developmentally ready to do so, regardless of 'training' received*" (Infant Sleep Information Source, n.d.-a, para 11). Others, however, do not agree, for example, "babies don't grow out of sleep problems. Studies show that most babies with sleep problems at one year of age will still have sleep problems at four years of age if nothing is done" (Mindell, 2005, p. 116). A literature review was conducted investigating the question that emerged can infants grow out of sleep disturbance without intervention? The result of this review found that infants typically do not grow out of ISD on their own.

Methodological Difficulties

While writing this thesis four major methodological difficulties became apparent. Firstly, the lack of relevant research cited by the authors of parenting resources. It would have made for a

more robust discussion if the authors backed up their claims with research. Research was often not cited directly but as bundle of information or at the end of a chapter where it could not be reliably matched to the published statements. Unfortunately, what research was discussed in the parenting resources was, for the most part, misinterpreted. Further confusing the misinterpretation is when authors of research also misinterpret their or others, research, and theory, surmising, and taking meanings that are not accurate. Both in the lay literature and research literatures authors of secondary sources frequently cited research incorrectly, e.g., “*The only bit of research we have on that comes from Dr Middlemiss and colleagues that found sleep training disrupted maternal-infant synchrony, at least temporarily*”

(www.evolutionaryparenting.com, n.d.-f, para 4). This highlights the ongoing difficulty when researchers make inferences about results that are not backed up by the data of their study.

Authors of sources, such as parenting resources, accepted inferences, and produced material that is misleading for and capable of frightening parents.

A second ongoing difficulty was the lack of cohesion between the resources in terms of definitions of ages, co-sleeping, sleep difficulties, and attachment concepts. Infant ages were not often stated in the parenting resources. This lack of clarity posed difficulties when researching sleep interventions for ISD which begin once the infant is 6 months old, effects of co-sleeping which could be either bed-sharing or room-sharing. The publication of misinterpreted attachment theory constructs, for example what constitutes a secure base and what specific attachment behaviours are, was especially concerning.

Adding to the confusion is the third methodological problem, which was the overlapping nature of infant development. It was difficult to tease apart statements that encompassed overlapping

factors. For example, infants who were bed-sharing, breastfeeding, and had infant sleep issues were meshed into one statement. Similarly, self-soothing, breastfeeding, and parental factors were confused into one statement.

The fourth, and possibly most frustrating, difficulty was the lack of effect sizes reported in the research, and relatedly, lack of attention to direct and systematic replication of findings. Without this it was very hard to evaluate claims about research. Although researchers report significant differences, associations, and correlations there is no sense of the magnitude of the effect size being reported. This lack of attention to effect sizes opens the research and its users to the misinterpretation of statistically “significant” group mean differences as being necessarily practically or theoretically significant (Lambdin, 2012), while the lack of attention to replication means that the reliability of the finding is essentially unknown (Klein, 2013 Sidman, 1960). Infant sleep research urgently needs to embrace contemporary movements towards better research methods and reporting (Cumming, 2012) that enhance the integrity and reliability of research findings.

Limitations of the Present Study

There are three major limitations of the present study. The first limitation was the difficulty of maintaining scientific rigour without having an exemplar to base boundaries and decisions upon. For example, how many parenting resources to include that encompassed enough of the polarising opinions while weighing up time and benefit factors. At times this resulted in boundaries being set and decisions emerging from the process of the writing the thesis and working with the data. All such decisions were, however, made in conjunction with my supervisors.

The second limitation was possible bias coming from working with a team of psychologists who, in part, base our evidence-based practice on behavioural theory, including interventions for ISD. In the field, as a psychologist I have seen how these interventions result in many positive outcomes for families. This may at times have affected what information I attended to over other information. For this reason a secondary coder who was not trained in behaviour theory but who is an advocate for attachment parenting strategies was included in the research process as one way of providing a balanced snapshot of what was included in the selected exemplars of parenting resources.

Finally, a minor limitation was the ambitious nature of the topic and this became increasingly apparent as the sheer volume of data unfolded from the parenting resources. Systematically collecting and cataloguing this data took a majority of the time allocated for the project. In hindsight, possibly choosing fewer resources may have helped with this, but it may not have covered the breadth of opinion/claims that the parenting resources publish.

Strengths of the Present Study

Three primary strengths of the present study are firstly, that it highlights the confusion that parents are being confronted with when trying to gain information about their infant's sleep difficulties and possible interventions. The confusion can be between the sources and sometimes within the sources. The publication of misinterpretation of concepts and research findings only adds to this confusion. A second strength of the study is that it very clearly sets out the information being published and read by parents from the parenting resources and the lack of evidence-based research behind much of what is being published. A third strength is it dissects studies that are reported in the parenting resources as evidence for claims. Upon dissection these

studies do not provide evidence for what is being claimed, for example the study by Middlemiss et al. (2012).

Implications Future Research Directions

Future research examining behavioural sleep interventions needs to collect and report data on breastfed infants in the study. As was discussed in Chapter Three the research thus far has included infants who were breastfed; however, no research has reported data which has plotted the course of breastfeeding before, during, and after behavioural sleep intervention. The lack of data on breastfeeding is most likely because researchers have not seen a need to provide this information because no disruption to breastfeeding is anticipated during a study.. There is generally no specific reason why those recommending a particular sleep intervention would recommend a change in feeding method, and generally clinicians would want parents to maintain other features of the infant's life as stable as possible during the intervention to keep matters as uncomplicated as possible. Concrete evidence of the effects of interventions on breastfeeding, nevertheless, would benefit parents and those writing parenting resources who are concerned.

A second direction for future research is to assess, in a formal manner, attachment prior to behavioural sleep intervention. Research has thus far assessed attachment at six year follow-up as have other concepts around the infant-parent relationship, such as bonding, but no research is yet to do this. Given what is known about the stability of cohesive attachment patterns, the attachment of an infant to the caregiver is unlikely to change after a behavioural sleep intervention, but once again concrete data would benefit parents. This is especially the case if data were to provide enough evidence to stop the publication of misinformed and misinterpreted information. As with the need for breastfeeding and attachment classification data further

research should endeavour to provide measurements of cortisol activation before, during, and after behavioural sleep interventions. This would again provide evidence that the misinformed and scaremongering information published in the parenting resources is just that.

Another future direction for research is to develop interventions for ISD that satisfies both the important constructs in behaviour theory and those in attachment theory. Although one could argue that behavioural sleep intervention for ISD already encompass the concepts of attachment theory, while being developed from coercion theory, because they are based on limit setting and strengthening the parent-infant relationship. Possibly all that is needed is research on teasing out the attachment principles already embedded in behavioural sleep interventions. Shaw and Bell (1993) concluded that two major theoretical frameworks of parent-child relationships include both developmental and transactional features: attachment theory and social learning theory. Attachment theory and social learning theory “postulate reciprocal interactions of parent and child, and transformations in the form of normative changes in the child or changes in family processes” (Shaw & Bell, 1993, p. 493).

Investigating interventions that have been developed for other psychological constructs that combine attachment and social learning theories may provide direction for future intervention for ISD. An intervention that is already integrating both coercion theory (Patterson, 1982) and attachment theory (Bowlby, 1969; Ainsworth et al., 1978) is Video Feedback Intervention to promote Positive Parenting –Sensitive Discipline (VIPP-SD). It focuses on ineffective parental discipline resulting in difficult child behaviour. The thrust of the intervention is “(1) inductive discipline and distraction- recommending induction and distraction as non-coercive responses to difficult child behaviour or potentially conflict evoking situations; (2) positive reinforcement- praising the child for positive behaviour and ignoring negative attention seeking; (3) the use of

sensitive time-out to sensitively de-escalate temper tantrums; and (4) empathy for the child, in particular consistent discipline and limit setting” (Juffer, Bakermans-Kranenburg & van Ijzendoorn, 2008, p. 18). VIPP-SD is described as a behaviourally oriented intervention using video feedback to promote parental sensitivity as well as adequate discipline strategies during parent-child interactions. (Juffer et al., 2008, p. 17).

One major difficulty with the translation of attachment-based interventions into interventions for ISD is the limited number of interventions that are directed at nonclinical low risk families. Intervention for ISD is not recommended for clinical populations because of the complexities that exist within the caregiver-infant relationship and their environment. In two meta-analyses carried out by Bakermans-Kranenburg, van Ijzendoorn, and Juffer (2003), Bakermans-Kranenburg and van Ijzendoorn (2005), six out of 70 published early intervention programmes aiming to promote positive parent-child interaction were directed at a nonclinical population. The other 64 interventions were directed at clinical or high risk families. Attachment-based interventions have potential for refining and testing attachment theory while giving tangible results to possibly answer theoretical and clinical issues. It is yet unknown, however, if a combined attachment and behavioural intervention for ISD can be effective other than what has already been shown during research into behavioural sleep interventions. A first step for further research should be teasing out the attachment theory concepts already embedded in behavioural sleep interventions.

Conclusion

The present study provides useful information on the confusion that parents encounter when researching information for infant sleep difficulties (i.e., from 6 months to 2 years). It is hoped that this detailed exploration of popular parenting resources and the reported lack of evidence-

based information that is published alleviates some parental anxiety around sleep intervention. Moreover, the factual information based on evidence-based research provided through this thesis can provide direction for further information published in parenting resources and in research. The findings of this research could also provide a basis for further research.

Appendices

Appendix A: Parenting Resources Text

Table 1: Parenting Resources Text

Text	Relevance	Quotes	References cited	Findings of the research cited
Text A. Beyond the sling (2012) Author: Mayim Bialik Publisher: Touchstone, New York, USA PhD Neuroscience Actress – Big Bang Theory	Opposes behavioural sleep interventions Advocate for Co-sleeping	1. “Teaching your child to stop needing you at night does not teach her to not need you; rather, it teaches her that you will not respond to her needs” (p.95). PR 2. “Knowing that my babies were right next to me at night allowed me to rest knowing that I could tell if they were too hot, too cold, not breathing right – whatever ... I felt safe next to them and I knew they were safe next to me” (p.99). CS 3. “So for me cosleeping facilitated what turned out to be one of my best parenting tools: nursing” (p.99). BF 4. “I assume that if we had our bed to ourselves, we would have more sex. But a lot of couples I talk to who parent this way have less sex than they did before anyway, and that’s okay” (p.102). CS 5. “We choose to lie with him until he falls asleep” (p.103). AI 6. “For us, our son eventually learnt to sleep at night, all night” (p.103). DP	1. Gordon, Jay & Goodavage, Maria (2002). <i>Goodnights: The Happy Parents’ Guide to the Family Bed</i> . New York. O 2. McKenna, James. (2007). <i>Sleeping with Your Baby: A Parent’s Guide to Co-sleeping</i> O	1. Reviewed on this table as Text G . 2. Reviewed on this table as Text M .
Text B. Kidwringling (2010) Author: Kaz Cooke Publisher: Penguin Group, Camberwell, Victoria, Australia Author and cartoonist	Advocates for parent choices, after infant is 6 months. Describes comforting back to sleep-wrap-pat tum slow rhythm, leave room before baby falls asleep (p.140)	1. “Some babies, especially ones who sleep with their mum, can train themselves to take little bits of milk, often, at the all-night milk bar” (p.136). BF, CS 2. “If you have a partner, get them to do half, or some, of the night feeds (using expressed breastmilk or formula)” Bedsharing – “for many years this has been advocated as part of the attachment parenting. Unfortunately, new evidence has shown that this is not the safest for your baby”. (p.137). BF 3. “You can train your baby over time to understand that they are being put to sleep by themselves ... but that you’ll return reassuringly if they need you so that they understand that they’re not being abandoned” (p. 140). ESI 4. “The people who subscribe to the attachment-parenting theory ... think that controlled crying is cruel because it teaches babies not to expect comforting on demand” (p.142). IA 5. “comfort baby back to sleep – wind-down time, wrap	1. Ferber, R. (2006). Solve your child’s sleep problems. O 2. Gethin, A. & MacGregor, B. (2011). Helping your baby to sleep: why gentle techniques work best. Finch Publishing: NSW, Australia. O 3. Hogg, T. (2009). Secrets of the baby whisperer. O 4. McKay, P. (2006). Sleeping like a baby. O 5. Symons, B. (2005). Silent nights: overcoming sleep problems in babies and children. Oxford University Press: Melbourne, Australia. O	1. Reviewed on this table as Text D . 2. Advocates that leaving babies to cry creates distress, examines why sleep training is risky. 3. Reviewed on this table as Text I . 4. Reviewed on this table as Text L . 5. Claims to give practical ways to help babies establish sleep patterns, no references.

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Text	Relevance	Quotes	References cited	Findings of the research cited
		baby firmly but not too tightly, put baby to sleep on back, pat tum gently with a slow rhythm until they're sleepy, leave the room before they actually fall asleep" (p. 213-218).		
Text C. On Becoming Babywise: Giving your infant the gift of nighttime sleep. (4th ed). (2006). Author: Gary Ezzo & Robert Bucknam Publisher: Parentwise Solutions Inc. Louisiana, USA. Gary Ezzo, MA. Director of Growing Families International. Robert Bucknam, Paediatrician.	Advocates establishing a parent-guided feed/wake/sleep routine	1.* "Sometimes you may think your baby is waking up when she's actually going through a phase of very light slumber. She could be squirming, startling, fussing, or even crying – and still be asleep ... don't make the mistake of trying to comfort her during these moments; you'll only awaken her further and delay her going back to sleep" (p.146, quoted from AAP in Shelov, S.P. (Ed.). PR 2.* "The most serious sleep problems we've encountered are associated with parents who sleep with their babies". Researchers at the University of Massachusetts Medical School say co-sleeping may prevent, rather than ensure, a good night's sleep" (p.58). CS 3. "Not only do children encounter long term sleep disruptions, but frequently the husband removes himself from the family bed so he can get a good night's sleep" (p.58). CS 4. "Your baby will not lose brain cells, experience a drop in IQ, or have feelings of rejection that will leave him manic-depressive at age thirty. You do not undo all the love and care of the waking hours with a few minutes of crying" (p.131). PR, C 5. "Allowing an infant to regulate his own life leads to formulation of nighttime sleep disturbances and poor sleep habits" (p.46). DP 6. "The family bed is unsafe" (p. 221).	1.* Shelov S.P. (Ed). (1998). Caring for your baby and young child. AAP. USA. P.183. O 2.* Madansky, D. & Edelbrock, C. (1990). Cosleeping in a community sample of 2- and 3- year old children, <i>Pediatrics</i> 86(2), 197-203. E 3. Elias, M.F., Nicholson, N.A., Bora, C. & Johnston, J. (1986). Sleep-wake patterns of breast-fed infants in the first years of life. <i>Pediatrics</i> 77(3), 322-329. E 4. Weissbluth, M. (1987). Healthy sleep habits, happy child. New York, Ballantine Books. P.44. O	1.* Book which recommends room-sharing without bed-sharing. Rationale in technical report. 2.* 303 caregivers of 2-3 yr olds interviewed about their infants sleep pattern. Results: Co-sleeping not associated with behaviour problems but co-sleepers high levels of sleep difficulties if still cosleeping 1 yr after initial assessment. RTTQ 3. 32 breastfed infants, followed for 2 years to collect data on 24 hour period of nursing and sleep. Results: Breastfed, bed sharing infants had less sleep overall than those weaned going into their 2 nd year. 4. Reviewed on this table as Text W .
Text D. Solve your child's sleep problems (2013) Author: Richard Ferber Publisher: Vermilion, London, UK	Advocates progressive waiting technique while sleep training. Helping your child learn to fall asleep with the proper associations : the	1. "It is not necessary to wean your child in order to break the association of feeding and falling asleep" (p.85). BF 2. "The process of learning new sleep associations will not hurt your child ... allowing some crying while you help your child learn to improve his sleep will never cause psychological damage" (p.99). PR, C 3. "Allowing some crying while you help your child learn	No references	

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Text	Relevance	Quotes	References cited	Findings of the research cited
Medical director, Center for Pediatric Sleep Disorders, Children's Hospital, Boston	progressive-waiting approach	to improve his sleep will never cause physiological damage" (p.99). C 4. "Perhaps surprisingly, nighttime feeds are a frequent, if easy to miss, cause of major sleep disturbances".		
Text E. The Contented Baby's First Year (2007) Author: Gina Ford Publisher: Vermilion, Random House Maternity nurse and author	Advocates for behavioural sleep interventions	1. "By following my guidelines, and adjusting the routines if need be to suit your particular child" (p.55). PR 2. "Usually started to sleep from the 10 pm feed through to 6-7 am somewhere between 8 and 12 weeks" (p.55). BF, ESI	No references	
Text F. Confident Baby Care (2010). Author: Jo Frost. Publisher: Orion Books, London, UK. Supernanny	Advocates graduated exposure: her own controlled crying technique after 6 months	1. Baby cries – go in and reassure. Wait 5 mins, go in and reassure and leave, then wait 10 mins. Repeat the process doubling the time each time you wait. "Soon you'll have a baby who can soothe himself to sleep without you" (p.177). PR 2. "Teaching him in a healthy way to soothe himself to sleep, and that's an important process for every child to learn" (p.177). PR	No references.	
Text G. Goodnights: The Happy Parents' Guide to the Family Bed (2002) Authors Jay Gordon & Maria Goodavage Publisher: St Martin's Press, New York, USA Doctor Gordon is a paediatrician and Maria Goodavage a writer with training	Opposes behavioural sleep interventions however, they say it can be helpful to parents at their wits end, they describe a technique on p. 170. Advocates Co-sleeping Kinder toned-down sleep training method p.170 for parents who are desperate	1. "Children who didn't co-sleep end up getting more professional help with emotional and behavioural problems than co-sleepers" (p.23). CS 2.* "Mothers actually sleep somewhat better, and longer, when their babies are with them" (p.14). CS 3* & 4.* "Stimulated by parents' movements and sounds, babies tend to spend less time in deep sleep, more time in light sleep" (p. 8). CS 5.* "One theory behind SIDS is that some infants fail to rouse themselves from deep sleep during a drop in body temperature or a pause in breathing" (p.8). CS 6.* "We know of no studies on short-term effects or even possible subtle, long-term effects of crying it out in humans. But studies of parent-infant separation involving "crying" in nonhuman primates show that the hormonal	1. Forbes, J.F., Weiss, D.S. & Folen, R. A.A. (1992). The co-sleeping habits of military children. <i>Military Medicine</i> 157(4), 196-200. E 2.* Keefe, M. (1988). The impact of infant rooming-in on maternal sleep at night. <i>Journal of Obstetric, Gynecologic & Neonatal Nursing</i> 17(2), 122-126. E 3.* McKenna, J., Mosco, S., Dungy, C & McAninch, J. 1990. Sleep and arousal patterns of co-sleeping human mother infant pairs: a preliminary physiological study with implications for the study of sudden infant death syndrome (SIDS), <i>American Journal of</i>	1. Explores patterns of co-sleeping of military 86 dependents aged 2-13 years. Results: a significant increase in co-sleeping with father's absence and that co-sleeping is less frequent in the psychiatric subpopulation. RTTQ 2.* Investigate sleep patterns between 11 mothers who roomed in with their infants at night compared to 10 who do not. Results: No increase in the amount or quality of sleep for mothers sleeping without their infants at night. RTTQ 3.* In laboratory study of 5 mother-infant pairs while cosleeping. Results: Shows sleep stages and awake periods

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in sleep research		<p>stress response of babies in these situations can be 'equivalent to or greater than that induced by physical trauma' (p.101). C</p> <p>7.* Citing Wolk & Lozoff (1989) "One would wonder whether these child-rearing practices may be teaching children not to rely on other people as a way of handling stress, but to rely on objects for comfort" (p.20). PR</p> <p>8.* "With our current models of normal sleep based on this half-century-old, outdated data, is it any wonder that some 30 per cent of children under age four are purported to have sleep problems" (p.86). DP</p> <p>9.* "So even though the babies were quiet, they were still feeling the effects of separation" (p.104). PR</p> <p>10. Quoting M.L. Commons, psychiatry lecturer Harvard University, "cortisol (a hormone secreted during stressful situations, such as crying it out) ... makes you more prone to the bad effects of future stress, it makes you prone to mental illness and makes it harder to recover from stress" (p.97).</p> <p>11. "Children who never slept in their parents' bed were harder to control, less happy, had more tantrums, handled stress less well and were more fearful than routinely co-sleeping children" (p.23).</p> <p>12. "Books often claim they'll help you learn to respect your baby's needs and rhythms, but they then turn around and teach you how to disrespect and ignore your little baby as he does his best to communicate his needs for closeness and food". "In the end, the baby often does begin to sleep through the night via these cry-it-out techniques, it could take minutes or hours over several days or weeks-sometimes even months...we don't like cry-it-out, but in fairness, they can be helpful to parents who are at their wits end who aren't willing to try the family bed, or who have one too many kids awake at night" (p.94-95). ESI</p> <p>13 "These children can wake up frequently to nurse than their cribbed, bottle fed friends, but it's usually little trouble for mom or baby. This is actually a more natural – and even healthier – situation than the sleep through-the-</p>	<p><i>Physical Anthropology</i>, 83: 331-47. E</p> <p>4.* Mosko, S., McKenna, M.J., Dickel, M. & Hunt, L. (1993). Parent-infant co-sleeping: the appropriate context for the study of infant sleep and implications for sudden infant death syndrome (SIDS) research. <i>Journal of Behavioural Medicine</i> 16(6), 589-610. E</p> <p>5.* Mosko, S., Richard, C., McKenna, J. & Drummond, S. (1996). Infant Sleep Architecture during bedsharing and possible implications for SIDS. <i>Sleep</i> 19, 677-684. E</p> <p>6.* & 9.* Coe, C.L., Wiener, S.G., Rosenberg, L.T. & Levine, S. (1985). Endocrine and immune responses to separation and maternal loss in nonhuman primates. In <i>The Psychobiology of Attachment and Separation</i>. Eds: Reite, M. Field T. 163-199. Academy Press: New York. E</p> <p>7.* Wolf, A.W. & Lozoff, B. (1989). Object attachment, thumbsucking and the passage to sleep. <i>Journal of the American Academy of Child and Adolescent Psychiatry</i> 28(2), 287-292. E</p> <p>8.* Wolfson, A., Lacks, P. & Fetterman, A. (1992). Effects of parent training on infant sleeping patterns, parents' stress and perceived parental competence. <i>Journal of Consulting and Clinical Psychology</i>, 60(1), 41-48. E</p>	<p>of mother and infant become entwined. RTTQ</p> <p>4.* Study of 8 mother-infant pairs while cosleeping. Results: Infant (2-5 mths old) sleep showed subtle alterations with co-sleeping, overlap with corresponding maternal sleep stages and decreases amount of Stage 3-4. RTTQ</p> <p>5.* In laboratory study of 35 mother infant dyads sleep. Results: By limiting the amount of stage ¼ sleep suggested bedsharing could promote infant arousability and might be protective against SIDS. NRTQ</p> <p>6.* & 9.* Chapter in a book- non human primates. NRTQ</p> <p>7.* Examines 4 child rearing practices impact on 126 infants. Results: infants who had an adult present at sleep onset were less likely to use an attachment object or suck their thumbs. NRTQ</p> <p>8.* Explores effects of 29 first time parents being taught behavioural strategies to promote infant sleep compared to 31 controls. Results: At age 6-8 weeks, infants from the training group displayed significantly better sleeping patterns than control group. NRTQ</p>

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		<p>night infants have at this age" (p.75).</p> <p>14. "For these parents we offer a sleep-training technique that is kinder and gentler. It is not something we recommend because some crying is often involved" (p.169).</p>		
<p>Text H. The Good Sleep Guide for You and Your Baby (2010) Author: Angela Henderson. Publisher: Hawthorn Press. Self-help writer</p>	<p>Advocates graduated extinction delaying response to crying & calming with non-feeding methods.</p>	<p>1. "How you respond to night crying, after this age ... (6 months) ... will form your baby's future sleeping habits" (p.36). DP</p> <p>2. "If your baby cries during this programme it is because her normal sleep associations have been removed. By delaying your response to crying you are allowing her to learn new sleep habits. These methods are clinically proven and will not harm your baby" (p.53). PR, ESI</p> <p>3. "Babies who can put themselves to sleep when they wake naturally in the night are known technically as self-soothing ... he has to learn how to do it" (p.17). PR, DP</p> <p>4. "Many children who are light sleepers sleep less well if bed-sharing" (p.31). CS</p> <p>5. Tips for reinforcing longer, unbroken, night-time sleep periods ... "aim to not feed or pick him up again during this period" (p.18).</p>	<p>1. Ball, H.L. (2002). Reasons to bed-share: why parents sleep with their infants. <i>Journal of Reproductive and Infant Psychology</i>. E</p> <p>2. Mindell, J. A., Kuhn, B., Lerwin, D.S., Meltzer, L.J. & Sadeh, A. (2006). Behavioural treatment of bedtime problems and night waking in infants and young children. <i>Pediatric Sleep</i> 29(10), 1263-1276. E</p> <p>3. Morris, S. & St James, I. (2001). Economic evaluation of strategies for managing crying and sleeping problems. <i>Archives of Disease in Childhood</i> 84, 15-19. E</p> <p>4. Nikolopoulou, M. & St James Roberts, I. (2002). Preventing sleeping problems in infants who are at risk of developing them. <i>Archives of Disease in Childhood</i>. E</p> <p>5. Ramchandani, P., Wiggs, L. & Stores, G. (2000). A systematic review of treatment for settling problems and night waking in young children. <i>British Medical Journal</i>, 320 (7229), 209-213. E</p> <p>6. Ferber, Richard (2006). Solve your child's sleep problems. O</p> <p>7. Ford, Gina. (2006). The new contented</p>	<p>1. Examine bedsharing practices of 253 families with infants 1-3months old. Results: Reasons articulated for bedsharing- Breast feeding, infant irritability or illness were all frequent reasons given.</p> <p>2. Review of 52 treatment studies. Results: Across all studies 94% of behavioural interventions were efficacious. 80% of children clinically significant improvement maintained at 3 and 6 months.</p> <p>3. Investigate the financial cost to NHS (UK) of crying and sleep problems in the first 12 weeks & (2) cost effectiveness of behavioural interventions. Results: costs £65 million (2) behavioural intervention a small additional cost and a small significant benefit.</p> <p>4. Identify factors which put 316 infants at risk for sleep difficulties & benefit of intervention. Results: (1). Infants who had higher number of feeds in 24 hour period at risk. (2). 82% of behaviour intervention group compared to 61% of control group slept through the night at 12 weeks old.</p> <p>5. Review of efficacy of treatments for settling problems and night waking in children under 5 years. Results: Behavioural interventions showed short term and possible long term efficacy.</p>

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			little baby book. O 8. Karp, Harvey (2012). The happiest baby on the block. O 9. Mulholland, Siobhan. (2008). Helping your baby sleep. O 10. Pantley, Elizabeth. (2002). The no-cry sleep solution. O	6. Reviewed on this table as Text D . 7. Reviewed on this table as Text E . 8. Reviewed on this table as Text J . 9. Reviewed on this table as Text O . 10. Reviewed on this table as Text P .
Text I. Top Tips from the Baby Whisperer: Sleep. (2009). Author: Tracy Hogg with Melinda Blau. Publisher: Vermilion, UK. Baby whisperer.	Advocates for sleep intervention	1. "Getting your baby on a structured routine" (p.7). ESI 2. "Pick up/put down - A sleep training tool four months to a year" (p.75). AI 3. Pick her up when she cries and put her down the minute she stops (p.79). PR 4. "I don't believe in allowing infants to cry alone, not even for five minutes" (p.49). PR 5. "It's crucial to teach a child to sleep in his own bed, be it crib or cot and encourage him to go to sleep on his own from 'Day One'" (p.49). CS	No references	
Text J. The Happiest Baby Guide to Great Sleep (2012). Author" Harvey Karp Publisher: HarperCollins, New York, USA. Pediatrician, child development specialist	Advocates graduated extinction, parental presence after trying other things.	1.* "that bed-sharing babies fed 3.7 times more often during the night and that a quarter of the dads ended up moving out of the "family bed" (p.49). CS 2. "After four months, you can start reducing nighttime nursing, yet continue daytime nursing" (p.175). BF 3. "You should always follow your instincts. But remember the more inconsistent you are, the more you'll accidentally teach her screaming will get her the things she wants" (p.189). PR 4. "Kids usually don't just outgrow their sleep struggles. These troubles typically persist until you do something to bring them under control" (p.152). DP	1.* Baddock, S.A., Galland, B.C., Taylor, B.J. & Bolton, D.P.G. (2007). Sleep arrangements and behavior of bed-sharing families in the home setting. <i>Pediatrics</i> , 119(1), 200-207. E 2. Bei, B., Milgrom, J., Ericksen, J. & Trinder, J. (2010). Subjective perception of sleep, but not it's object quality, is associated with immediate postpartum mood disturbance in healthy women. <i>Sleep</i> 33(4) 531-538. E 3. Dennis, C. & Ross, L. (2005). Relationships among infant sleep patterns, maternal fatigue, and development of depressive symptomatology. <i>Birth</i> 32(3), 187-193. E 4. Doan, T., Gardiner, A., Gay, C. L. & Lee, K. (2007). Breast-feeding increases sleep duration of new parents. <i>Journal of Perinatal & Neonatal Nursing</i> , 21(3), 200-206. E 5. Pinilla, T. & Birch, L.L. (1993). Help me	1.* Observe 40 bedsharing infants overnight video and physiological monitoring. Results: Mother-infant dyad most prominent during bedsharing. Infants seldom in contact with their fathers. 2. Investigated relationship between disrupted sleep and 1 week postpartum mood disturbances in women. Results: Perception of poor sleep, awareness of its impact might share a stronger relationship with immediate postpartum mood disturbance than actual sleep quality and quantity. 3. Examine infant sleep patterns, 505 maternal fatigue, and the development of postpartum depression 1 week postpartum. Results: Suggest that infant sleep patterns and maternal fatigue are strongly associated with onset of depressive symptoms in the

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			<p>make it through the night: behavioural entrainment of breastfed infants' sleep patterns. <i>Pediatrics</i>, 91(2), 436-444. E</p> <p>6. Gaylor, E.E. & Burnham (2005). A longitudinal follow-up study of young children's sleep patterns using a developmental classification system. <i>Behavioural Sleep Medicine</i>, 3(1), 44-61. E</p> <p>7. Hauck, F.R., Signore, C., Fein, S.B & Raju, T. N.K. (2008). Infant sleeping arrangements and practices during the first year of life. <i>Pediatrics</i> 122(2), s113-s120. E</p> <p>8. Mindell, J.A., Meltzer, L.J., Clarkson, M.A. & Chervin, R.D. (2008). Developmental aspects of sleep hygiene: findings from the 2004 National Sleep Foundation in America poll. <i>Sleep Medicine</i>, 10, 771-779. E</p> <p>9. Mindell, J.A., Telofski, L.S., Wiegand, B. & Kurtz, E.S. (2009). A nightly bedtime routine: Impact on sleep in young children and maternal mood. <i>Sleep</i>, 32(5), 599-606. E</p> <p>10. Paul, I.M., Savage, J.S., Anzman, S.L., Beiler, J.S., Marini, M.E., Stokes, J.L. & Birch, L. L. (2001). Preventing obesity during infancy: a pilot study. <i>Obesity</i> 19(2), 353-361. E</p> <p>11. Gaylor, E.E. & Burnham (2005). A longitudinal follow-up study of young children's sleep patterns using a developmental classification system <i>Behavioural sleep medicine</i> 3(1), 44-61. E</p> <p>12. Henderson, J.M., France, K.G. & Owens, J.L. (2010). Sleeping through the night: the consolidation of self-regulated sleep across the first year of life. <i>Pediatrics</i> 126, 1081-87. E</p> <p>13. Hiscock, H. & Wake, M. (2002). Randomised controlled trial of behavioural</p>	<p>postpartum period.</p> <p>4. Examine sleep patterns of 133 infants (breastfeeding compared to supplementation). Results: Parents of infants given formula self-reported more sleep disturbance than infants exclusively breastfed at night.</p> <p>5. Investigate whether exclusively breast-fed 8 week old infants could learn to sleep through the night 12am-5am. Results: Parents supported breast-fed infants to lengthen nighttime sleep bouts, & continue breastfeeding.</p> <p>6. Observation of 68 infants sleep during 1st year with annual follow-up phone interviews until children 4 years. Results: 19% have sleep problems at 2 years. Non self-soothers in the 1st year more likely to have a sleep onset problem and be co-sleeping at 2 yr.</p> <p>7. Examine sleeping arrangements of 1800 infants at 3-6-9-12mths. Results: 27% of infants co-slept at 12months. Reasons were calming fussy infant, breastfeeding, helping infant & mother get sleep.</p> <p>8. Examine association between sleep hygiene and sleep patterns in 1473 children, newborn to 10 years. Results: All ages, parental present at sleep onset had the strongest association with sleep problems.</p> <p>9. Examine impact of 3 week bedtime routine on 405 infant (7-36mths) sleep. Results: routine resulted in significant reductions in problematic sleep behaviours.</p> <p>10. 100 breastfeeding mothers received 2, 1 or no soothe/sleep behavioural</p>

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			<p>infant sleep intervention to improve infant sleep and maternal mood. <i>British Medical Journal</i>, 324, 1062-65. E</p> <p>14. Mindell, J.A., Kuhn, B., Lerwin, D.S., Meltzer, L.J. & Sadeh, A. (2006). Behavioural treatment of bedtime problems and night waking in infants and young children. <i>Pediatric Sleep</i> 29(10), 1263-1276. E</p> <p>15. Touchette, E., Petit, D., Bovin, M., Japel, C., Tremblay, R.E. & Montplaisir, J.Y. (2005). Factors associated with fragmented sleep at night across early childhood. <i>Archives of Pediatrics & Adolescent Medicine</i>, 159, 242 – 249. E</p>	<p>interventions & taught about introducing healthy foods. Results: Behavioural interventions may have potential for obesity prevention.</p> <p>11. 68 infants sleep observed during first year of life w follow-up interviews until child 4 years old. Results: 19% have sleep problems at 2 years non self-soothers in first year had sleep onset problems and co-sleeping at 2 year follow-up.</p> <p>12. Investigate consolidation of 75 infants night time sleep over first year. Results: Most rapid consolidation in first 4 months. At 2 and 3 months most infants sleeping through the night 22.00 to 06.00 hours.</p> <p>13. Compare the effects of behavioural intervention and sleep information on 156 infants (6-12mths) sleep. Results: Behavioural intervention reduced infant sleep problems at 2 mths but not 4 mths post.</p> <p>14. Review of 52 infant sleep intervention studies. Results: 94% of behavioural interventions were efficacious. 80% of children significant improvement maintained 3 and 6 mths.</p> <p>15. Identify factors associated with 174 infant aged 5, 17, 29 months sleeping >6 consecutive hours at night. Results: At 5 months 23% of children did not sleep 6 consecutive hours associated with feeding the infant after an awakening. Parental presence at sleep onset was most strongly associated at 17 mths and 29 mths.</p>
Text K. Your Baby and	Advocates Graduated	1. “Reassure him that you are still close by; kiss him again and leave. You may have to repeat this over and	No references	

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Child (2003) Author: Penelope Leach Publisher: Dorling Kindersley, London, UK. Research psychologist specialising in child development.	exposure for over 6 month olds. However, delaying the times you go back in is not measured.	over again, but it is the only sure way eventually to convince him that you really will come but that you really will not get him up or stay with him and put him to sleep" (p.264). PR 2. "Is co-sleeping dangerous or not? We know there are lots of pros and cons but all we're concerned with right now is the safety issues and we can't get a simple answer" (p.183). CS		
Text L. Sleeping Like a Baby (2006) Author: Pinky McKay Publisher: Penguin, Camberwell, Victoria, Australia. Parenting expert/writer/lactation consultant	Opposes sleep interventions The first chapter in book called "The Con of Controlled Crying" Advocates for The baby steps plan sleep associations – play music, special words and sounds, books or stories, massage, music, a both, wrapping, rocking, patting, stroking, meditation (p.213-238)	1.* Controlled crying is not consistent with what infants need for their optimal emotional and psychological health, and may have unintended negative consequences" According to AAIMHI, there have been no studies, such as sleep laboratory studies, to our knowledge, that assess the physiological stress levels of infants who undergo controlled crying, or its emotional or psychological impact on the developing child" (p.26). C 2.* Citing McKenna he "described controlled crying as 'social ideology masquerading as science" (p.27). ESI 3.* Gerhardt (2003) cited "when a baby is upset, the hypothalamus produces cortisol ... if exposed for too long or too often to stressful situations (such as being left to cry) its brain becomes flooded with cortisol and it will then either over- or under-produce cortisol whenever the child is exposed to stress. Too much cortisol is linked to depression and fearfulness; too little emotional detachment and aggression" (p.29). C 4. "It is the very principle that makes controlled crying 'work' that is of greatest concern. When controlled crying 'succeeds' in teaching a baby to fall asleep alone, it is due to a process that neurobiologist Bruce Perry calls the 'defeat response'. Babies eventually abandon their crying as the nervous system shuts down the emotional pain and striving to reach out". (p.33). C 5. "This process – attachment - is a behavioural system that operates twenty-four hours a day even when your baby is asleep which could be (with luck) up to 60% of the time" (p.4). AS	1.* Australian Association of Infant Mental Health (AAIMHI) Position Paper (2013). Controlled Crying. O 2.* McKenna, J. (2004). <i>International Association of Infant Mental Health 9th World Congress, Melbourne</i> . O 3.* Gerhardt, Sue. (2003). Why Love Matters: How affection shapes the brain. O 4. Perry, B., Pollard, R.A., Blaichley, T.L., Baker, W.L. & Vigilante, D. (1995). Childhood Trauma, the neurobiology of adaptation, and 'use-dependent' development of the brain: how states become traits. <i>Infant Mental Health Journal</i> , 16(4), 271-291. E	1.* States controlled crying is "not consistent with infants' and toddlers' needs for optimal emotional and psychological health and may have unintended negative consequences". 2.* Congress paper- Unable to find 3* Book. Cites research from Gunnar & Donzella (2002). NRTQ 4. Discusses the possible impact of traumatic experiences (abuse, maltreatment, natural disaster etc) on the development of a child's brain.

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		<p>6. "In the small number of studies undertaken, while most babies will indeed stop waking when they are left to cry 'success' varies from an extra hours' sleep each night to little difference between babies who underwent sleep training and those who didn't, eight weeks later"(p.30). ESI</p> <p>7. "Controlled crying and other similar regimes may indeed work to produce a self-soothing, solitary sleeping infant. However, the trade-off could be an anxious, clingy or hyper-vigilant child or even worse, a child whose trust is broken" (p.32). IA, C</p> <p>8. "although many baby sleep trainers claim there is no evidence of harm from practices such as controlled crying, it is worth noting that there is a vast difference between 'no evidence of harm' and 'evidence of harm'" (p.26). IA, C</p> <p>9. "When infant cries are ignored, this trauma elicits a 'freeze' or 'defeat' response. Babies eventually abandon their crying as the nervous system shuts down the emotional pain and the striving to reach out" (p.33). C</p>		
<p>Text M. Sleeping with Your Baby: A Parent's Guide to Co-sleeping. (2007).</p> <p>Author: James McKenna Publisher: Platyus Media: Washington. Anthropologist Director: Mother-baby behavioural sleep laboratory, University of Notre Dame</p>	Opposes	<p>1.* "Some studies have suggested elevated levels of cortisol in infancy can cause physical changes in the brain, prompting a greater vulnerability to social attachment disorders" (p.38). C</p> <p>2*, 4* & 6*. "When compared to solitary sleeping children, children who have coslept tend to make friends easily, are more innovative, better able to control their tempers, and better problem-solvers" (p.78). CS</p> <p>3.* "A recent epidemiological study showed that approximately 720 American babies die each year from congenital or infectious diseases, or illness complications, because they were not breastfed" (p.44). BF</p> <p>5.* Because of co-sleeping "your child may have developed a more permanent capacity for self-sufficiency, resilience, comfort with affection, and the ability to be alone when necessary" (p.78). CS</p> <p>7.* "Minimal contact with mother's body can make the neurological scaffolding less stable and effective, weakening the structures that provide the basis of the</p>	<p>1.* Brazy, J.E. (1988) Effects of crying in cerebral blood volume and cytochrome aa3. <i>The Journal of Pediatrics</i>, 112: 457-461. E</p> <p>2.* Crawford, M. (1994) Parenting practices in the Basque Country: implications of infant and childhood sleep location for personality development. <i>Ethos</i>. 22(1): 42-82. E</p> <p>3.* Chen, A., Rogan, W. (2004). Breastfeeding and the risk of post-neonatal death in the United States. <i>Pediatrics</i>, 113: E435-E439. E</p> <p>4.* Forbes, J.F., et al. (1992). The co-sleeping habits of military children. <i>Military Medicine</i>, 157: 196-200. E</p> <p>5.* Keller, M.A. & Goldberg, W.A. (2004). Co-sleeping: help or hindrance for young children's independence? <i>Infant and Child Development</i>, 13: 369-388. E</p> <p>6.* Lewis, R.J. & Janda, L.H. (1998). The</p>	<p>1.* Investigate if a crying episode in 36 infants (17hrs-24days old) alters cerebral hemodynamic and oxidative metabolism in the brain, and the oxidation-reduction state of cytochrome aa3. Results: Crying alters cerebral blood volume in all neonates in a pattern consistent with cyclic obstruction, it decreases cerebral oxygenation in infants with respiratory problems. NRTQ</p> <p>2.* 219 Basque mothers were interviewed on cultural behaviours and beliefs, socialisation practices. Results: Prolonged (4-5yrs) sleeping in parent's bedroom correlated with higher ego strength. NRTQ</p> <p>3.* Using data from the 1988 US National Maternity and Infant Health</p>

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		<p>infant's rapidly growing communicative skills, emotionality, and ability to effectively regulate and respond to its own needs" (p.20). CS</p> <p>8.* "Even the mother's expelled carbon dioxide (CO2) is not wasted in a co-sleeping situation; the amount of CO2 the mother expires in her breath acts to stimulate infant breathing:" (p.41). CS</p> <p>9.* "Aside from this, several studies show that breastfeeding mothers and newborns get more rest when they co-sleep" (p.42). CS</p> <p>10. "For breastfeeding mothers, cosleeping can ease interruptions caused by nighttime feedings" (p.42). BF, CS</p> <p>11. Mothers who bedshare often report they hardly need to awaken when the baby is hungry or that they need only awaken for a few minutes to get the baby latched on" (p.42). CS</p> <p>12. "Babies who cosleep are much more less likely to cry themselves to sleep, or even cry at all, and so avoid releasing an excess of this hormone" (p.38). CS, C</p> <p>13. "Enhanced attachment and parental fulfilment- especially for working mothers, increased time with baby during the night, enhances attachment and helps the mother to feel fulfilled as a parent" (p.47). IA</p> <p>14. "Your baby will benefit from an almost immediate response to his or her needs" (p.38). PR</p> <p>15. "Nighttime research shows that the average breastfeeding interval of routinely bedsharing mothers is close to an hour and a half, or the length of the human sleep cycle" (p.43).</p> <p>12 pages on safety and sleeping with your baby, 61-72.</p>	<p>relationship between adult sexual adjustment and childhood experience regarding exposure to nudity, sleeping in the parental bed, parental attitudes towards sexuality. <i>Archives of Sexual Behaviour</i>, 17: 349-363. E</p> <p>7.* Mosko, S., McKenna, J.J., Dickel, M. & Hunt, L. (1993). Parent-infant co-sleeping: the appropriate context for the study of infant sleep and implications for sudden infant death syndrome (SIDS) research. <i>Journal of Behavioural Medicine</i>, 16(6): 589-610. E</p> <p>8.* Mosko, S., McKenna, J., Drummond, S., & Mukai, D. (1997). Maternal proximity and infant CO2 environment during bed sharing and possible implications for SIDS research. <i>American Journal of Physical Anthropology</i>, 103(3): 315-328. E</p> <p>9.* Quillin, S.I.M., & Glenn, L.L. (2004). Interaction between feeding method and co-sleeping on maternal-newborn sleep. <i>Journal of Obstetric, Gynaecologic and Neonatal Nursing</i>, 33: 580-588. E</p> <p>72 additional references but none attached to quotes 10-15.</p>	<p>Survey (NMIHS) Results: an association between breastfeeding and reduction in post-neonatal death.</p> <p>RTTQ</p> <p>4.* Explores patterns of co-sleeping in 86 military dependents aged 2-13 years. Results: a significant increase in co-sleeping with father's absence and that co-sleeping is less frequent in the psychiatric subpopulation. NRTQ</p> <p>5.* Investigate the relationship 83 mother/infant dyads sleeping arrangements and claimed positive and negatives to co-sleeping Results: solitary sleepers fell asleep alone, slept through the night, and weaned earlier than the co-sleepers. However, early co-sleeping children were more self-reliant and exhibited more social independence. NRTQ</p> <p>6.* Examine relationship of 210 adults sexual functioning and childhood co-sleeping experiences. Results: suggest childhood experiences with exposure to nudity and sleeping in the parental bed not adversely related to adult functioning and adjustment. NRTQ</p> <p>7.* Study of 8 mother-infant cosleeping dyads. Results: Suggest co-sleeping associated with enhanced infant arousals and increases which overlap with corresponding maternal sleep stages and decreases amount of Stage 3-4. RTTQ</p> <p>8.* Explore how the co-sleeping (bed-sharing) environment might be protective against SIDS. Results: Bed sharing gives an opportunity for (1) a high degree of face to face orientation</p>

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				and close proximity, and consequently (2) increased environment CO2. RTTQ 9.* Explore relationship between type of feeding and sleeping arrangements at 4 weeks postpartum of 33 mother/infant dyad. Results: Breastfed newborns had less total sleep. RTTQ
Text N. Sleeping through the night (1997) Author: Jodi Mindell. PhD Psychologist		1. "Babies don't grow out of sleep problems. Studies show that most babies with sleep problems at one year of age will still have sleep problems at four years of age if nothing is done" (p.116). DP 2. "The hope and belief that most parents have is that they will have to deal with sleep issues only once and that when their baby is sleeping through the night, their worries are over. Unfortunately, this isn't the case" (Illness, vacations, separation anxiety) (p.120). ESI 3. "There has been a great deal of research over the past decade on the importance of infant-parent attachment. A few studies have assessed the impact of sleep training or attachment. These studies have actually found that young children are more securely attached to their parents following sleep training" (p.153/154). IA 4. "Many studies have been conducted supporting the efficacy of the sleep-training method outlined above. This method, formerly referred to as "graduated extinction" in the medical and psychological literature, has been delineated as well established according to evidenced-based guidelines" (p.99). ESI 5. "Breastfed babies are more likely to fall into the habit of nursing to sleep and needing to be nursed back to sleep when they naturally awaken during the night. They are also more likely to take longer to sleep through the night" (p.7).	No references	
Text O. Helping Your Baby to Sleep (2008) Author: Siobhan	Advocates after six months for controlled crying, repetitive reassurance and	1. "At six months you can really start to shape his sleeping process" (p.33). ESI 2. "See if he can make the transition from wakefulness to sleep by himself... sleep train" (p.33). ESI 3. Explains three methods, Controlled Crying, Repetitive	No references.	

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Mulholland Publisher: Vermilion London, UK Freelance Writer	gradual withdrawal	Reassurance, and Gradual Withdrawal, with the pros and cons on pages 33-35.		
Text P. The No-Cry Sleep Solution (2002) Author: Elizabeth Pantley Publisher: McGraw-Hill: USA. Parenting educator	Opposes – criticises crying-it-out.	1. "Dr Sears is my parenting hero" (p.xiv). AP 2. "Create a personal sleep plan" (p.159). AI 3. "Comfort until baby almost asleep" (p.147). PR 4. "Pat her, comfort without pickups, comfort outside doorway" (p.149-150). PR	No references	
Text Q. Soothe your baby the natural way (2005) Author: Pamela Rhatigan Publisher: Hamlyn. Natural therapist	Does not mention sleep interventions, Advocates for massage, natural remedies	1. "Remove any distractions... feed again... a reassuring loving hug" (p.48-49). AI 2. "If you are breastfeeding you can let baby stay in bed with you" (p.49). BF, CS 3. "Attending to your baby's cry promptly allows you to observe the signals that may indicate what it is that he needs" (p.32). PR	No references	
Text R. Parent Babble (2012) Author: John Rosemond Publisher: Andrews McMeel, Kansas City, USA. Psychologist	Advocates Graduated extinction. Opposes co-sleeping fervently	1. "Since the 1970's, I've been advising parents through my books and syndicated newspaper column to use... graduated extinction" (p.148). ESI 2. "The couple who sleeps together, without children in between them, is the couple most likely to stay together"(p.155). CS 3. "McKenna also says "that the benefits of co-sleeping are verified by his own and others' refereed (subject to rigorous peer review), published scientific research." Once again it appears that he conveniently ignores evidence to the contrary (p.147-148). CS 4. "Over the years I've counseled many parents who regretted ever embracing the family bed" (p.134). CS 5. "Family bed proponents claim it assists with bonding and attachment and other such nonsense, but no study by an impartial party has found any lasting benefit to it"	1. Mosko, S., Richard, C., & McKenna, J. (1997) Infant arousals during mother-infant bed sharing: implications for infant sleep and Sudden Infant Death Syndrome Research. <i>Pediatrics</i> , 100(5) 841-849. E 2. Sadeh, A. (1994) Assessment and intervention for infant night waking: parental reports and activity-based home monitoring. <i>Journal of Consulting and Clinical Psychology</i> , 62(1) 63-68. E	1. In laboratory study of 35 mother infant dyads sleep. Results: By limiting the amount of stage ¾ sleep suggested bedsharing could promote infant arousability and might be protective against SIDS. 2. Assessment of behavioural sleep intervention on 50 infants (9-24mths) sleep. Results: During intervention the infants sleep improved.

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Text S. Baby Bliss (2009) Author: Jo Ryan Publisher: Harper Collins Sydney, Australia Nurse and Masters of Public Health	Opposes Controlled crying, however Advocates for the Baby Bliss Technique, part of the settling technique involves giving a baby the chance to calm down by waiting 3-5 mins and then re-entering the room.	(p.135). CS 1. "The Baby Bliss Settling Technique is a great alternative to the two extremes of settling babies: Controlled Crying and Attachment Parenting" (p.143). AI 2. "I find this technique is 100% successful in teaching babies to sleep on their own but it can take anywhere from two nights to two weeks to be completely effective" (p.145). AI 3. "I am not a huge fan of cosleeping because it is not really safe, and also it is not especially restful for anyone - baby or parents" (p.45). CS	No References.	
Text T. The Sensational Baby Sleep Plan (2010) Author: Alison Scott-Wright Publisher: Bantam Press London, UK. Nurse	Does not take a stand, however, advocates for her own sleep plan which uses an unregulated timeframe of graduated exposure.	1. "All babies learn by association and very quickly get used to repetitive patterns" (p.157). AI 2. "When you implement it you will be giving your baby one message and one message only, thus removing any previous confusion" (p.157). ESI, AI 3. "if he is given immediate attention when he stirs throughout his sleep he will not be able to develop the ability to re-settle himself after waking during his natural sleep cycles" (p.14). PR 4. "When he stirs during the night, try to sit back for a few minutes and see whether he is going to re-settle himself before you rush to tend to him" (p.95). PR 5. "My suggestion is to put your baby in his own room within the first few weeks, or as soon as you feel comfortable doing so" (p.76). CS 6. The sleep-training and routine go hand in hand to create a happy child. It gives them security and makes them less tired" (p.106). ESI 7. "Babies are not born with negative sleep associations, they only learn and adopt the bad habits we teach them" (p.22). ESI	1. Yoo, S., Hu, P.T., Gujar, N., Jolesz, F.A., & Walker, M.P. (2007). A deficit in the ability to form new human memories without sleep. <i>Nature Neuroscience</i> , 10(3), 385-392. E Two pages of references from Ferber & Ford to Sears and Gerhardt. WebMD – Several articles citing Mindell.	1. 28 adults were randomly assigned to either a sleep deprivation or a sleep control group. Results: A single night of sleep deprivation has an effect on hippocampal activity.
Text U. The baby sleep book (2005)	Opposed to "cry it out" Suggests- feeding	1.* "A baby who only cries briefly for a few nights is probably fine. What about crying for many minutes, night after night? We can't say how many minutes and how	1a.* Butler S.R., Suskind, M.R. & Schanberg, S.M. (1978). Maternal behaviour as a regulator of polyamine biosynthesis in	1a.* Rat pups observed during maternal deprivation. Results: 50% reduction in ornithine decarboxylase activity

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<p>Author: Sears, W., Sears, R., & Sears, M. Publisher: Thorsons: London, UK. Dr William Sears, Paediatrician, his wife Martha, a Registered Nurse, and son Robert, a Doctor</p>	<p>to sleep, rocking, wearing down in a sling...soft music, lullabies, white noise, dummy, patted, scent ,massage" (p.14)</p>	<p>many nights are safe, because no one has ever researched this" (p.23). C 2. "Formula-fed babies tend to wake up less often than breastfed babies. Formula is digested more slowly than breastmilk, so tiny tummies stay full longer. Also, we suspect bottles and formula are not as strong a motivation for waking up as the breast and mother's milk" (p.140). BF 3. "Researchers have discovered a sleep-inducing protein in mother's milk. So, night feeding helps both the baby and the mummy sleep" (p.141). BF 4. "We are going to be honest with you. The cry it out method appears to work – at least some of the time, in some families. Many parents have tried it, and some babies have learned to go to sleep on their own fairly quickly" (p.208). ESI 5. "Do you want to teach your baby attachment-based sleep associations or independence-based sleep associations? ... closer bond between parent and baby ... you don't teach baby to fall asleep, you force him to" (p.12). ESI, C 6. "Medical research has shown that excessive crying creates stress for a baby" (p.12). C 7. "try both the quick and the delayed response ... this is a waking-by-waking decision. It helps to remember that not all noises that sleeping babies make are cries for help" (p.27). PR 8. "a lose-lose situation, both parents and baby are affected. When you go against your biological programming, you lose confidence in your own ability to understand your baby. Your baby loses trust in his ability to make himself understood. Because the two of you do not communicate as well, you drift apart" (p.207). PR, IA 9. "Children who are products of insensitive cry it out sleep training methods do appear to "sleep through the night" at an earlier age. But they are sleeping more anxiously and the result of this is that they tend to have more sleep problems as toddlers and pre-schoolers"</p>	<p>brain and heart of developing rat pups. <i>Science</i>, 199, 445-447. E 1b.* Kuhn, C.M., & Schanberg, S.M. (1978). Selective depression of serum growth hormone during maternal deprivation in rat pups. <i>Science</i>, 201, 1034-1036. E 1c.* Coe, CL., Wiener, S.G., Rosenberg, L.T. & Levine, S.E. (1985). Endocrine and immune responses to separation and maternal loss in non-human primates in <i>The Psychology of Attachment and Separation</i>, Ed M. Reite and T. Fields, 163-199. E 1d.* Ahnert, L., Gunnar, M.R., Lamb, M.E. & Barthel, M. (2004). Transition to child care: associations with infant-mother attachment, infant negative emotion, and cortisol elevations. <i>Child Development</i>, 75(3) 649-650. E 1e.* Kaufman, J., Charney, D. (2001). Effects of early stress on brain structure and function: implications for understanding the relationship between child maltreatment and depression. <i>Developmental Psychology</i>, 13(3) 451-471. E 1f.* Teicher, M.H., Andersen, S.L., Polcari, A., Anderson, C.M., Navalta, C.P & Kim, D.M. (2003). The neurobiological consequences of early stress and childhood maltreatment. <i>Neuroscience Biobehaviour Review</i>, 27(1-2): 33-44. E 1g.* Wolke, D., Rizzo, P. & Woods, S. (2002). Persistent infant crying and hyperactivity problems in middle childhood. <i>Pediatrics</i>, 109, 1054-1060. E 1h.* Perry, B.D. (1997). Incubated in terror neurodevelopmental factors in the cycle of violence in <i>Children in a Violent Society</i>. E 1i.* Schore, A.N. (1996). The experience dependent maturation of a regulatory system</p>	<p>suggest active maternal behaviour is necessary for growth hormone. NRTQ 1b.* Rat pups observed during and after maternal deprivation. Results: Suggest that maternal deprivation in rat pups elicits suppression of growth hormone. NRTQ 1c.* Chapter in a book- non human primates 1d.* 70 infant's (15mths old) salivary cortisol was assessed in home and childcare setting. Attachment was assessed before and at 3 months into child care began. Results: Cortisol rose during the 60 mins after mother departed 75% to 100% higher than in the home setting. NRTQ 1e.*Review preclinical (e.g. animal) studies of the effect of early stress and studies of the neurological correlates of NDD in adults and children. Results: no paucity of preclinical studies and little work on the neurobiology of child and adolescent affective disorders. NRTQ 1f.* Examine the neurobiological consequences of childhood maltreatment. Results: Consequences of early stress are both structural and functional. Suggest the neurobiological sequelae of maltreatment may preclude the emergence of psychiatric disorders. NRTQ 1g.* Investigate association between persistence crying in 64 infant (3mths) and externalising behaviour problems at 8-10 yrs Results: Infants referred for persistent crying problems at increased risk for academic difficulties and</p>

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Text	Relevance	Quotes	References cited	Findings of the research cited
		<p>(p.68). IA, C</p> <p>10. "Crying it out harmful to babies" (p.23). C</p> <p>11. Working with a family with a depressed mother, Sears' advise "if you resent it, change it ... what her baby needed most was a happy and rested mother". Father to manage the baby's sleep and comfort "allowing a baby to cry in someone else's arms is vastly different from leaving a baby alone to cry in a cot" (p.94-97). PR12</p> <p>12. "I would waken seconds before my baby. When the baby started to squirm I would lay on a comforting hand, and she would drift back to sleep. Sometimes I did this automatically and didn't even wake up" (p.110).</p>	<p>in the orbital prefrontal cortex and the origin of developmental psychopathology. <i>Development and Psychopathology</i>, 8 59-87. E</p> <p>1j.* Karr-Morse, R., Wiley M. (1997) Interview with Dr Allan Schore, <i>Ghosts from the Nursery: Tracing the Roots of Violence..</i> Atlantic Monthly Press: New York, USA. O</p> <p>1k.* Brazy, J.E. (1988). Effects of crying in cerebral blood volume and cytochrome aa3. <i>Journal of Pediatrics</i>, 112(3) 457-61. E</p> <p>1l.* Ludington-Hoe, S.M. (2002)).Infant crying: nature, physiologic consequences, and select interventions, <i>Neonatal Network</i>, 21(2) 29-36. E</p> <p>1m.* Lieberman, A.F.& Zeanah, H. (1995). Disorders of attachment in infancy. <i>Child and Adolescent Psychiatric Clinics of North America</i>. 4(3), 571-587. E</p> <p>1n.* Rao, M.R., Brenner, R.A., Schisterman, T.V. & Mills, J.L. (2004). Long-term cognitive development in children with prolonged crying. <i>Archives of Disease in Childhood</i>, 89, 898-992. E</p> <p>1n.* Stifter, C.A. and Spinrad, T. (2002). The effect of excessive crying on the development of emotion regulation. <i>Infancy</i>, 3(2) 133-152. E</p> <p>2. Blair, P.T., Fleming, P.J., Smith, I.J., Platt, M.W., Young, J., Nadin, P., Berry, P.J., Golding, J., & The CESDI SUDI Research Group. (1999). Babies sleeping with parents: Case-control study of factors influencing the risk of the Sudden Infant Death Syndrome. <i>British Medical Journal</i>. 319(7223): 1457-1461. E</p> <p>3. Crawford, M. (1994). Parenting practices in the Basque Country: implications of infant and childhood sleep location for personality</p>	<p>hyperactivity. NRTQ</p> <p>1h.* Chapter in a book. Discusses trauma and maltreatment effect on brain development. NRTQ</p> <p>1i.* Chapter in a book. Discusses critical period (0-2yrs) of prolonged episodes of intense and unregulated interactive stress manifest in disorganising experiences of heightened negative affect and altered levels of stress hormones. RTTQ</p> <p>1j.* Book ???</p> <p>1k.* Investigate if a crying episode in 36 infants (17hrs-24days old) alters cerebral hemodynamic and oxidative metabolism in the brain, and the oxidation-reduction state of cytochrome aa3. Results: Crying alters cerebral blood volume in all neonates in a pattern consistent with cyclic obstruction, it decreases cerebral oxygenation in infants with respiratory problems. NRTQ</p> <p>1l.* Describes the nature of infant crying and appropriate nursing interventions. Caregivers are encouraged to answer infant cries swiftly, consistently and comprehensively. RTTQ</p> <p>1m.* Explore if excessive crying and colic that persists beyond 3 months is associated with adverse cognitive development in 561 children. Results: Children with prolonged crying had an adjusted mean IQ 9 points lower than the control group. NRTQ</p> <p>1n.* Examine the effect of excessive crying in early infancy on the development of emotional self-</p>

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Text	Relevance	Quotes	References cited	Findings of the research cited
			<p>development. <i>Ethos</i>, 22(1): 42-82. E</p> <p>4. Elias, M.F., Nicolson, N.A., Bora, C., & Johnston, J. (1986). Sleep/wake patterns of breast-fed infants in the first 2 years of life. <i>Pediatrics</i>, 77(3): 322-329. E</p> <p>5. Thomson-Salo, F. (2008). A review of "touch in early development". <i>Infant observation: International Journal of Infant Observation and its Applications</i>, 2:3, 81-83. E</p>	<p>regulation in 116 infants. Results: Excessive criers show higher levels of negative reactivity than typical criers at 5-10mths of age. NRTQ</p> <p>2. Investigate risk SIDS and unsafe sleeping environments. Results: Bed sharing should be avoided with under 4 month olds, not on sofa. No evidence that bed sharing is hazardous for infants of non-smoking parents.</p> <p>3. 219 Basque mothers were interviewed on cultural behaviours and beliefs, socialisation practices. Results: Prolonged (4-5yrs) sleeping in parent's bedroom correlated with higher ego strength, NRTQ</p> <p>4. 32 breastfed infants, followed for 2 years to collect data on 24 hour period of nursing and sleep. Results: Breastfed, bed sharing infants had less sleep overall than those weaned going into their 2nd year.</p> <p>5. Review of the benefits of infant massage.</p>
<p>Text V. The science of parenting (2006)</p> <p>Author: Margot Sunderland Publisher: Dorling Kindersley Ltd: London, UK. Director of Education and Training for the Centre for Child Mental Health in London.</p>	<p>Opposed. Case study – Billy – sleep training – less responsive during the day, "it's really as if he isn't there anymore"</p>	<p>1. "Extensive scientific research shows that safe co-sleeping can be a real investment for your child's future physical and emotional health. Sleeping with your baby can positively influence his physiology. Skin to skin contact throughout the night has been shown to regulate a baby's immature body and brain systems and can play a key role in maintaining his long-term mental and physical wellbeing" (p.70). CS</p> <p>2. "Babies sleeping "skin-to-skin" with their parents appear to be less likely to have a serious illness in the first six months after birth" (p.71). CS</p> <p>3. "This is because physical contact helps to regulate the stress response system in the brain – which, without this regulation, can become hard-wired for oversensitivity... it can be very difficult for a child, as he grows up, to calm</p>	<p>1a. Field, T. (1994) The effects of mother's physical and emotional unavailability on emotion regulation, <i>Monographs of the Society for Research in Child Development</i>, 59, (2-3)208-27. E</p> <p>1b. McKenna, J.J., Thoman, B., Anders, T.F., Sadeh, A., Schechtman, V.L., & Glotzbach, S.F. (1993). Infant-parent co-sleeping in an evolutionary perspective: implications for understanding infant sleep development and the sudden infant death syndrome. <i>Sleep</i>, 16(3) 263-82. E</p> <p>2a. Buckley, P., Rigda, R.S., Mundy, L. & McMillen, I.C. (2002). Interaction between bed sharing and other sleep environment</p>	<p>1a. Essay reviewing harmonious integration with the mother or the primary caregiver (attunement) is critical for the development of emotion regulation. .</p> <p>1b. Three postulations by McKenna including co-sleeping benefits are then discussed by Thoman, Andes, Sadeh, Schechtman and Glotzbach.</p> <p>2a. Investigate places of sleep of 93 infant in first six months. Results: Bed sharing acts as a proxy for increased close parental proximity.</p> <p>2b. Explore basic questions about the nature of loss. Results: long term</p>

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		<p>himself down when stressed" (p.71-72). CS</p> <p>4. "Some studies show that children who have never slept in their parents' bed are harder to control" (p.72). CS</p> <p>5. "A baby is not capable of settling himself to a state of inner peace and wellbeing ... infants who have been trained not to cry can often be seen staring into space with a fixed stare. Allan Schore calls it "the black spot in going-on-being" or "conservation-withdrawal". In attachment theory, when a child starts to bottle up his feelings rather than express them, the process is known as PROTEST-DESPAIR-DETACHMENT" (p.79). IA</p> <p>6. "If you decide to sleep train make sure that you don't use a method that involves prolonged crying even for a few nights" (p.78). ESI</p> <p>7. "For centuries, people have got children to behave by activating the brain's FEAR system. But studies show that repeated activation of this system in childhood can lead to anxiety disorders in later life" (p.81). C</p> <p>7. "If you consistently soothe your child's distress over the years, and take any anguished crying seriously, highly effective stress response systems can be established in his brain. These will enable him to cope well with stress in later life" (p.37). C</p> <p>8. "A child who has experienced periods of prolonged crying can develop an over-sensitive stress-response system that may affect her throughout life. This can mean that all too often her perception of the world and what is happening to her will be coloured by a sense of threat and anxiety, even when everything is perfectly safe" (p.38). C</p> <p>9. "A distressed baby has a highly activated HPA axis that keeps pumping out cortisol. This can be compared to a central heating system that can't be switched off" (p.40). C</p> <p>10. "The more responsive you are, the greater your regulation of her body arousal systems will be, and the more long-lasting the effects" (p.44). PR, C</p> <p>11. "Research shows that if a child's need for comfort is not met with emotional responsiveness and soothing, this system can, over time, become wired for bodily</p>	<p>during the first six months of life. <i>Early Development</i> 66 (2) 123-32. E</p> <p>2b. Hofer M.A. (1996). On the nature and consequence of early loss. <i>Psychosomatic Medicine</i>, 58(6) 570-81. E</p> <p>2c. Kramer, M., Cushing, B.S. & Carter, C.S. (2003). Developmental effect of oxytocin on stress response: single versus repeated exposure. <i>Physiological and Behaviour</i>, 79 (405) 775-82. E</p> <p>3. McKenna J.J., & McDade, T. (2005). Why babies should never sleep alone: A review of the co-sleeping controversy in relation to SIDS, bed sharing and breastfeeding. <i>Paediatric Respiratory Reviews</i>, 6(2): 134-152. E</p> <p>4a. Hertsgaard, L., Gunnar, M., Farrell Erickson, M., Nachmias, M. (1995). Adrenocortical responses to the strange situation in infants with disorganises/disoriented attachment relationship. <i>Child Development</i>, 66(4): 1110-1106. E</p> <p>4b. Perry, B.D., Pollard, R.A., Blackley, T.L., Baker, W.L., & Vigilante, D. (1995). Childhood trauma, the neurobiology of adaptation, and "use dependent" development of the brain. How 'states' become 'traits'. <i>Infant Mental Health Journal</i>, 16: 271-91. E</p> <p>5a. Adamec R.E., Shallow, T., & Budgell, J. (1997). Blockade of CCK (B) but not CCK (A) receptors before and after the stress of predator exposure prevents lasting increases in anxiety-like behavior: implications for anxiety associated with posttraumatic stress disorder. <i>Behavioural Neuroscience</i>, 111(2): 435-49. E</p> <p>5b. Bremner, J.D., Innis, R.B., Southwick,</p>	<p>effects of loss, and of selective replacement of regulators, on behavioural development and later vulnerability to disease.</p> <p>2c. Investigate the effects of neonatal exposure of rat pups to exogenous oxytocin. Results: Suggest that endogenous OT may be involved in development of the stress response in females.</p> <p>3. Review of co-sleeping studies. Suggests that room sharing with breastfeeding prevents SIDS.</p> <p>4a. Explore salivary cortisol levels assessed in 19 month olds following the strange situation. Results: Disorganised (D) attachment classified toddlers had higher cortisol concentrations that toddlers with ABC classifications.</p> <p>4b. The impact of trauma on the developing brain is discussed in context of basic principles of neurodevelopment.</p> <p>5a. Investigate effects of rodents 5mins exposed to a cat 5 min Results: Anxiety like behaviour, startle and corticosteroid levels. Proposed as a model of affective disorder in posttraumatic stress disorder (PTSD).</p> <p>5b. Examine measures of benzodiazepine receptor binding in PTSD in humans. Results: Lower distribution volumes were found in the prefrontal cortex (Brodmann's area 9) of 13 PTSD patients than in 13 comparison subjects.</p> <p>6a. Literature review of the effects of early stress on the developing nervous system and behavioural outcomes.</p>

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		<p>hyperarousal" (p.44). C</p> <p>12. "When a child is suffering because of the absence of a parent, the same parts of the brain are activated as when he or she is feeling physical pain" (p.52). C</p> <p>13. "the technique is effective from the parent's point of view, but it can never be considered as a worthwhile achievement" (p.78). ESI - no direct reference</p> <p>14. "Parents can be trained out of their instinct to comfort a child, and a child can be trained out of his instinct to cry... but science is now showing us the costs ... being left to cry means a child learns that he is abandoned just at the time when he needs help." (p.63). PR - no direct reference</p> <p>15. "So leaving your baby 'to settle herself' can have long-term adverse consequences for her body and brain" (p.45). C - no direct reference</p> <p>16. As long as no one in the house smokes, or the parents are likely to sleep so deeply because they have been consuming alcohol, are on medication or are simply exhausted (p.72). No direct reference.</p>	<p>S.M., Staib, L., Zonghbi, S., Charney, D.S. (2000) Decreased benzodiazepine receptor binding in prefrontal cortex in combat-related posttraumatic stress disorder. <i>The American Journal of Psychiatry</i>, 157(7): 1120-1126. E</p> <p>6a. Dawson, G., Ashman, S.B., Carver, L.J. (2000) The role of early experience in shaping behavioural and brain development and its implications for social policy. <i>Developmental Psychology</i>, 12(4):695-712. E</p> <p>6b. Gunnar, M.R. (1989) Studies of the human infant's adrenocortical response to potentially stressful events, <i>New Directions/or Child Development</i> 45:3-18. E</p> <p>7a. Ashman, S.B., Dawson, G., Panagiotides, H., Yamada, E., & Wilkinson, C.W. (2002). Stress hormone levels in children of depressed mothers. <i>Development and Psychopathology</i>, 14:333-349. E</p> <p>7b. Blunt Bugental, D., Martorell, G.A., & Barraza, V. (2003). The hormonal costs of subtle stress of infant maltreatment. <i>Hormones and Behaviour</i>, 43: 237-244. E</p> <p>7c. Gunnar, M.R. & Donzella, B. (2002). Social regulation of the cortisol levels in early human development. <i>Psychoneuroendocrinology</i> 27: 199-220. E</p> <p>8a. Haley, D.W., & Stansbury, K. (2003). Infant stress and parent responsiveness: regulation of physiology and behaviour during still-face and reunion, <i>Child Development</i>, 74(5): 1534-46. E</p> <p>8b. Unvas-Moberg, K. (1998). Oxytocin may mediate the benefits of positive social interaction and emotions, <i>Psychoneuroendocrinology</i>, 23(8): 819-835. E</p>	<p>Beneficial effects of early interventions and positive parental mental health during the first year of life. Significant influence on early brain activity and behaviour and long term behavioural outcomes.</p> <p>6b. Review of research. Summary points: (1) The adrenocortical system is responsive to stimulation at birth. (2) Increases in cortisol are not always as associated with behavioural distress in the infant. (3) At least under certain conditions, the infant appears to rapidly habituate or attenuate its response with repeated exposure to the same events.</p> <p>7a. Investigated whether 45 children (7-8 yrs old) of depressed mothers exhibit elevated salivary cortisol levels. Results: preliminary evidence that exposure to maternal depression in the first 2 years of life may be related to children's cortisol levels later in life.</p> <p>7b. Investigate effect of corporal punishment on 44 toddlers. Results: showed high hormonal reactivity to stress infants who experienced frequent emotional withdrawal by their mother showed elevated baseline level of cortisol. The hormonal response, may foster risk for immune disorders cognitive and social-emotional problems</p> <p>7c. Review of studies of cortisol and behaviour in children (birth to 5 yrs). Results: High cortisol responsively of newborn diminishes and it becomes difficult to provoke increases in cortisol to stressors by the end of the first year.</p> <p>8a. Examines 43 infant (5-6mo)</p>

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Text	Relevance	Quotes	References cited	Findings of the research cited
			<p>9a. Graham, Y.P., Heim, C., Goodman, S.H., Miller, A.H., & Nemeroff, C.B. (1999). The effects of neonatal stress on brain development: implications for psychopathology. <i>Development and Psychopathology</i> 11:545-565. E</p> <p>9b. Levenson, R.W. (2003). Blood, sweat and fears – the architecture of Emotion, <i>Annals of the New York Academy of Sciences</i>, 1000: 348-366. E</p> <p>10. Panksepp, J. (2003). Neuroscience: feeling of pain of social loss, <i>Science</i>, Oct 10; 302(5643): 237-239. E</p>	<p>response and recovery from a social challenge and parent responses. Results: Infants of more responsive parents show more regulation than infants of less responsive parents.</p> <p>8b. Review of Oxytocin involvement in physiological and behavioural effects induced by social interaction. Results: In both male and female rates oxytocin exerts potent physiological anti stress effects.</p> <p>9a. Literature review of early adverse experiences in rodents, primates and humans. An increased sensitivity to the effects of stress later in life and render an individual vulnerable to stress-related psychiatric disorders.</p> <p>9b. Chapter describing ways the autonomic nervous system (ANS) plays a role in the architecture of human emotion.</p> <p>10. Reviews Eisenberger et al., (2003) study B1 and concludes the fMRI can be used to look at other emotion of loss and love.</p>
<p>Text W. Healthy Sleep Habits, Happy Child (2003) 3rd Ed.</p> <p>Author: Marc Weissbluth Publisher: Ballantine Books, New York, USA. Paediatrician Founder of Sleep Disorders Centre,</p>	Advocates	<p>1. “There has been much misunderstanding about “insecurity” and “crying to sleep” because of a failure to make the distinction between (1) the importance of sleeping well when we are in a biological sleep mode and (2) the importance of security of attachment when we are in a biological awake mode” (p.xx) AS</p> <p>2. “Breast-fed babies are often fed more frequently than formula-fed babies, but it is not known whether this is caused by the breastfeeding mother responding more promptly to her baby’s quiet sounds or whether breast milk digestion causes the baby to wake more often” (p.77). BF</p> <p>3. “You are harming your child when you allow unhealthy sleep patterns to evolve or persist-sleep</p>	34 pages of references however no direct references to quotes	

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Chicago Children's Memorial Hospital, Professor of Clinical Paediatrics.		<p>deprivation is as unhealthy as feeding a nutritionally deficient diet" (p.266). PR, DP</p> <p>4. "After 4 months of age, "let cry", controlled crying, or check and console might be needed for a formerly extremely fussy/colicky baby. Rarely, this might be done for a younger baby" (p.242). ESI</p> <p>5. "Research has shown this method to work well over a period of four to nine nights. Again, your success depends on your child's tendency to fuss and cry, how well rested or overtired he is, and how consistent you are" (p.213). ESI</p> <p>6. "There are many ways to help your child sleep. You should choose the solution that works best for you and your child" (p.103). ESI</p> <p>7. "The resulting sleep disturbances might produce fatigue, and the body would naturally respond by turning up production of those chemicals, such as cortisol, responsible for maintaining alertness and arousal" (p.114). C</p> <p>8. "If your child does not learn to sleep well, he may become an incurable adult insomniac chronically disabled from sleepiness and dependent on sleeping pills" (p.xix). DP</p>		

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Appendix B: Parenting Resources Websites

Table 2: Parenting Resources Websites

Website	Relevance	Quotes	Sources/research cited	Findings of research cited
Website A. www.ahaparenting.com Dr Laura Markham, Clinical Psychologist	Opposed to “cry it out”	<p>1.*The most recent claim that letting kids “cry it out” without reassurance may cause lasting damage is the finding that when a baby is left to cry alone, her cortisol level shoots up, indicating distress. That’s not surprising. What is surprising is the research study* showing that on subsequent nights -- even when the baby is put into bed and does not cry -- her cortisol level still shoots up” (/ages-stages/newborns/case-against-Ferber-sleep). C</p> <p>2. “When your child is old enough to learn new sleep associations (during his second year), you can stop rocking or nursing, and just comfort your child back to sleep. He may cry, but he will have the comfort of your love, and he will learn the skill of putting himself to sleep” (/parenting-tools/attachment-parenting). PR, AI</p> <p>3. “I should acknowledge that I know many kids who were Ferbered as babies by their parents who shall remain nameless because they are dear friends of mine. These kids all seem fine to me. So while I think Ferbering is a risk factor, it’s hardly the worst thing you can do to your kids” (/ages-stages/newborn s/case-against-Ferber-sleep). ESI</p> <p>4. “Babies who sleep with their moms end up synchronising their REM sleep cycles” (/ages-stages/newborns/helping-your-baby-get-to-sleep) CS</p> <p>5. “Richard Ferber is a paediatrician with no psychological training” (/Ages-stages/newborns/case-against-ferber-sleep).</p> <p>6. “Your baby is learning that you cannot be depended on. She learns that you will not help her when she is needed – it is possible that these early lessons will underlie her sense of self and worldview for the rest of her life” (/Ages-stages/newborns/case-against-ferber-sleep). IA</p>	<p>1.* Middlemiss, W., Granger, W.A., Nathans, L. (2012). A synchrony of mother-infant hypothalamic-pituitary-adrenal axis activity following extinction of infant crying responses induced during the transition to sleep. <i>Early Human Development</i>, p.227-232. E</p> <p>2. Sunderland, M. (2006). <i>The Science of Parenting</i>. London, England: Dorling Kindersley O</p>	<p>1.* Measure cortisol of 25 infants and their mothers on Day 1 & 3 of a 5 day inpatient sleep training programme to learn to self-settle. Results: Researchers claim on the third day of the programme infants physiological and behavioural responses were dissociated. This research is extensively criticised for its methodology and claims in Ch 3 of this thesis. RTTQ</p> <p>2. Parenting resource reviewed on this table as Text V.</p>

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Website	Relevance	Quotes	Sources/research cited	Findings of research cited
		<p>7. "Infants are hardwired to sleep with their mothers, and nurse at night, for many months, probably until toddlerhood...my personal experience is that the family bed is heavenly" (/Ages-stages/newborn/ helping-your-baby-get-to-sleep). BF, IA</p> <p>8. "There are many studies claiming that repeatedly leaving babies to cry it out is a risk factor that predisposes kids to permanent brain changes and mental health issues in later life" (/ages-stages/newborn s/case-against-Ferber-sleep). C</p>		
<p>Website B. www.askdrsears.com Dr Sears plus family.</p>	<p>Opposed to "cry it out alone". Caregivers need to use their intuition.</p>	<p>1.* "Research shows a benefit of co-sleeping is infants virtually never startle during sleep and rarely cry during the night, compared to solo sleepers who startle repeatedly throughout the night and spend 4 times the number of minutes crying" (topics/health-concerns/sleep-problems/scientific-benefits-co-sleeping). CS</p> <p>2.* "Co-sleeping babies grow up with a higher self-esteem, less anxiety, become independent sooner, are better behaved in school, and are more comfortable with affection. They also have less psychiatric problems" (topics/health-concerns/sleep-problems/scientific-benefits-co-sleeping). CS</p> <p>3. "On the surface, baby training sounds so liberating, but it's a short-term gain for a long-term loss. You lose the opportunity to know and become an expert in your baby" (/topics/health-concerns/sleep-problems/sleep-trainers-buyer-beware). IA</p> <p>4. "Follow your heart rather than some sleep trainer's advice, and you and your baby will eventually work out the right nighttime parenting style for your family" (/topics/health-concerns/sleep-problems/sleep-trainers-buyer-beware). AI</p>	<p>1.* McKenna, J., et al (1994) Experimental studies of infant-parent co-sleeping: Mutual physiological and behavioral influences and their relevance to SIDS (sudden infant death syndrome)." Early Human Development 38:187-201. E</p> <p>2a.* Heron, P. (1994) Non-Reactive Cosleeping and Child Behavior: Getting a Good Night's Sleep All Night, Every Night. Master's thesis, Department of Psychology, University of Bristol. E</p> <p>2b.* Crawford, C.J. (1994). Parenting Practices in the Basque Country: Implications of Infant and Childhood Sleeping Location for Personality Development" Ethos 22(1), 42-82. E</p> <p>2c.* Forbes, J.F., Weiss, D.S. & Folen, R. A.A. (1992). The co-sleeping habits of military children. <i>Military Medicine</i> 157(4), 196-200. E</p>	<p>1.* Abstract only. Co-sleeping changes infant sleep experience. Difference in arousals, sleep position and frequency of breastfeeding. NRTQ</p> <p>2a.* Masters thesis, not available</p> <p>2b.* 219 Basque mothers interviewed on cultural behaviours and beliefs, socialisation practices. Results: Prolonged (4-5yrs) sleeping in parent's bedroom correlated with higher ego strength. NRTQ</p> <p>2c.* Investigate patterns of co-sleeping in 86 military dependents aged 2-13 years. Results: significant increase in co-sleeping with father absence and that co-sleeping is less frequent in the psychiatric subpopulation. RTTQ</p>

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Website	Relevance	Quotes	Sources/research cited	Findings of research cited
		<p>5. "Sleepsharing babies usually go to sleep and stay asleep. Being parented to sleep at the breast of mother or in the arms of fathers creates a healthy go-to-sleep attitude" (/topics/health-concerns/sleep-problems/co-sleeping-yes-no-sometimes). CS</p> <p>6. "We have noted that infants who sleep with their parents (some or all of the time during those early formative years) not only thrive better, but infants and parents are more connected" (/topics/health-concerns/sleep-problems/co-sleeping-yes-no-sometimes). CS</p> <p>7. "Parent-soothing method. When baby is ready to sleep, a parent or other caregiver helps baby make a comfortable transition from being awake to falling asleep, usually by nursing, rocking, singing, or whatever comforting techniques work" (topics/health-concerns/sleep-problems/31-ways-to-get-your-baby-to-stay-asleep). AI</p> <p>8. "Self-soothing method disadvantages-risk baby losing trust-seldom works for high-need babies with personalities-overlooks medical reasons for night waking" (topics/health-concerns/sleep-problems/31-ways-to-get-your-baby-to-stay-asleep). PR, IA</p>		
<p>Website C. www.attachmentparenting.org Our Mission is to educate and support all parents in raising secure, joyful, and empathetic children in order to strengthen families and create a more compassionate world. Teachers: Barbara</p>	<p>Opposes behavioural sleep interventions. Advocates for Attachment parenting strategies.</p>	<p>1. "Babies cannot be expected to self-soothe, they need calm, loving, empathic parents to help them learn to regulate their emotions" (/principles/introduction). PR</p> <p>2. "Being present and attending to infants when they wake and cry can help infants return to sleep more quickly" (praeclaruspress.com/simple_ways_to_calm_a_crying_baby.pdf). PR</p> <p>3. "New research suggests that these techniques (self-soothing) can have detrimental physiological effects on the baby by increasing the stress hormone cortisol in the brain, with potential long term effects to emotional regulation sleep patterns</p>	No research cited	

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Website	Relevance	Quotes	Sources/research cited	Findings of research cited
Nicholson and Lysa Parker, 17 years ago		and behaviour... The part of the brain that helps with self-soothing isn't well developed until the child is 2½ to 3 years" (/principles/night). C 4. "Sleep training can have detrimental physiological and psychological effects" (/principles/introduction). IA, CS		
Website D. www.babysleepsite.com Run by psychologists and lactation consultants.	Advocate for sleep training	<p>1.* "If left untreated bedtime problems can result in behaviour, emotion regulation, and academic performance (/baby-sleep-resources-healthcare-providers/). DP</p> <p>2.* Infant sleep patterns and maternal fatigue are strongly associated with a new onset of depressive symptoms in the postpartum period. Bedtime problems and night waking are common in young children affecting up to 30% of infants and toddlers" (/baby-sleep-resources-healthcare-providers/). DP</p> <p>3.* "Bedtime problems and night wakings are common in young children, affecting up to 30% of infants, toddlers, and preschoolers" (/baby-sleep-resources-healthcare-providers/). DP</p> <p>4.* "When left untreated, bedtime problems and night wakings in young children do not spontaneously resolve" (/baby-sleep-resources-healthcare-providers/). DP</p> <p>5. "Readers, you probably know by now that we're a little (or maybe a lot) passionate about sleep training at the Baby Sleep Site. But there's something else we are passionate about; helping moms sleep train in a way that won't jeopardise their commitment to breastfeeding" (/sleeptraining/breastfeeding-baby-sleep-training-relationship). BF, ESI</p> <p>6. "You don't have to forsake sleep in order to breastfed well" (/sleep training/ breastfeeding-baby-sleep-training-relationship). BF</p> <p>7. "Babies (5-9_ sleep through the night when they achieve 6-8 hours of continuous nighttime sleep. Many breastfeeding mothers can go one 6-8 hour</p>	<p>1.* Meltzer, L.J. (2010). Clinical management of behavioural insomnia of childhood: treatment of bedtime problems and night wakings in young children. <i>Behavioural Sleep Medicine</i> 8: 172-189. E</p> <p>2.* Dennis, C., & Ross, L. (2005). Relationships among infant sleep patterns, maternal fatigue and development of depressive symptomatology. <i>Birth</i>, 32(3): 187-193. E</p> <p>3a.* Goodlin-Jones, B., Burnham, M., Gaylor, E.E. & Anders, T.F. (2001). Night waking, sleep-wake organisation, and self-soothing in the first year of life. <i>Journal of Developmental Pediatrics</i>, 22(4): 226-233. E</p> <p>3b.* Lozoff, B., Wolf, A.W., & Davis, N.S. (1985). Sleep problems seen in pediatric practice. <i>Pediatrics</i>, 75(3):477-483. E</p> <p>3c.* Mindell, J.A., Kuhn, B., Lerwin, D.S., Meltzer, L.J. & Sadeh, A. (2006). Behavioural treatment of bedtime problems and night waking in infants and young children. <i>Pediatric Sleep</i>, 29 (10); 1263-1276. E</p> <p>4a.* Jenni, O., Fuhrer, H.Z., Iglowstein, I., Molinari, L. & Largo, R.H. (2005). A longitudinal study of bed sharing and sleep problems</p>	<p>1.* Reviews Behaviour insomnia of children (BIC). Followed by review of how operant theory is applied to behavioural interventions for BIC. RTTQ</p> <p>2.* Examine association between infant sleep patterns, maternal fatigue, and postpartum depression in 505 mothers 1 week postpartum. Results: Maternal fatigue and infant sleep patterns are strongly associated with onset of maternal depressive symptoms. RTTQ</p> <p>3a.* 80 infants in 4 age groups (3, 6, 9, 13 mo) were videosomnography to code night time wakings and parent-child interaction. Results: Younger infants tended to need more parental intervention to return to sleep whereas older exhibited greater self-soothing abilities. RTTQ</p> <p>3b.* Explore what infant/family factors sleep problems commonly seen in pediatric practice are associated with. Results: 5 experiences distinguished children with sleep problems, accident or illness, unaccustomed absence of mother during the day, maternal depressed mood, bedshring, maternal ambivalence. RTTQ</p> <p>3c. Review of 52 treatment studies. Results: Across all studies 94% of behavioural interventions were efficacious. 80% of children clinically significant improvement maintained at 3 and 6 months.</p> <p>4a.* Longitudinal of bed-sharing practices and sleep problems among 493 Swiss families. Results First year of life few children slept with their parents, bed sharing increased with age and reached maximum at 4 yrs. Nocturnal wakings</p>

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		<p>stretch per 24 hours (at 5-9 months) between breastfeedings without causing a drop in milk supply" (/sleeptraining/breastfeeding-baby-sleep-training-relationship). BF</p> <p>8. "We use cry-it-out to mean a sleep training method that is used to change sleep associations and to help parents set limits as to what they will and will not "do" in the name of sleep" (/sleeptraining/should-you-let-baby-cry-it-out). ESI</p> <p>9. "Some parents reject cry-it-out due to fear or misconceptions...remember, there are lots of stages in between rocking your baby all night long and letting her wail for hours" (/should-you-let-your-baby-cry-it-out). PR</p> <p>10. "You can even practice attachment parenting and sleep train" (/sleep-training-cruel-the-mommy-wars-continue). AP</p> <p>11. "The number one key to successful sleep training is consistency" (/14-tips-for-better-baby-and-toddler-sleep-in-2014). ESI</p>	<p>among Swiss children in the first 10 years of life. <i>Pediatrics</i>, 115(1): 233-240. E</p> <p>4b.* Kataria, S., Swanson M.S. & Trevathan, G.E. (1987). Persistence of sleep disturbances in preschool children. <i>Journal of Pediatrics</i>, 110 (4): 642-646. E</p> <p>4c.* Lam, P., Hiscock, H., & Wake, M. (2003). Outcomes of infant sleep problems: A longitudinal study of sleep, behaviour, and maternal wellbeing. <i>Pediatrics</i>, 111(3): e203-e207. E</p> <p>5. Zuckerman, B., Stevenson, J., & Bailey, V. (1987). Sleep problems in early childhood: continuities, predictive factors, and behaviour correlates. <i>Pediatrics</i>, 80(5): 664-671. E</p>	<p>also increased from 6 mths to a maximum at 4 yrs. RTTQ</p> <p>4b.* Explore if environmental stressors and sleep problems in 60 infants 25 had sleep disturbance at initial interview (mean age 26.4 mo) 21 had persistence of sleep disturbance after 3 yrs. Results: Co-sleeping was noted more frequently in sleep-disturbed. RTTQ</p> <p>4c.* Investigate recurring, persisting, and resolving sleep problems, identify early predictors of later sleep problems and comorbidities of persistent or recurrent sleep problems at age 3-4yrs. Results: Persistent sleep problems common and associated with slightly higher child behaviour problems and maternal depression scores. RTTQ</p> <p>5. Evaluate predictive factors and behavioural correlates of sleep problems in young children. Results: 41% of infants with sleep problems at 8 mo still at 3 yrs. Psychosocial factor associated with persistent sleep problems.</p>
<p>Website E. http://bawlingbabies.blogspot.co.nz/2006/06/quotes-from-various-doctors.html A social worker and parent from Australia.</p>	<p>Opposes Concerned with the western practice of controlled crying. Urges people to search the information on the site to be better informed about controlled crying.</p>	<p>1.* "The Australian Association for Infant Mental Health does not support the practice of controlled crying stating that the technique "is not consistent with what infants need for their optimal emotional and psychological health, and may have unintended negative consequences" (/2006/06/quotes-from-various-doctors). IA, C</p> <p>2.* "The cry-it-out approach undermines the very basis of secure attachment, which requires prompt responsiveness and sensitive attunement during the first year after birth" (http://www.mothering.com/articles/new_baby/bonding/connection.html). IA</p> <p>3. "There is no doubt that repeated lack of responsiveness to baby's cries-even for only five minutes at a time- is potentially damaging to the baby's mental health" (/2006/06/quotes-from-various-doctors). PR, C</p>	<p>1.* Australian Association of Infant Mental Health (AAIMHI) Position Paper (2013) Controlled crying http://www.aaimhi.org/documents/position%20papers/controlled crying.pdf O</p> <p>2.* Balbernie, R. (2001). Circuits and circumstances: the neurobiological consequences of early relationship experiences and how they shape later behaviour. <i>Journal of Child Psychotherapy</i>, 27(3) 237-255. E</p> <p>Other research cited but no references are attached to quotes.</p>	<p>1.* States controlled crying is "not consistent with infants' and toddlers' needs for optimal emotional and psychological health and may have unintended negative consequences". RTTQ</p> <p>2.* Examines sensitive period for brain plasticity and growth over the first 3 years of life. Damage is experience dependant especially when threatened by abuse and neglect. NRTQ</p>

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		<p>4. "According to attachment researchers, the consequences of this parenting style are fewer behaviour problems and mental disorders, less social misconduct, a greater ability to form lasting adults relationships, and improved overall health"(http://www.babyreference.com/EarlyPuberty.html). AP</p> <p>5. "A major need for secure attachment is for a parent to respond to infant needs and cues, it is important not to leave your baby to cry ... crying always signals a need. Provide comfort when your baby is upset. (http://www.cyh.com/HealthTopics/HealthTopicDetails.aspx?p=114&np=122&id=1902).IA</p> <p>6. "The new body of sophisticated, cross-discipline research on attachment and brain development outlined in this article, it is clear that a baby's willingness to accept sleep training after reportedly brief periods of protest is no less than a cycle of hyperarousal and dissociation responses that is damaging to development" (http://www.mothering.com/articles/new_baby/bonding/science-of-attachment.html). IA, C</p> <p>7. "The widespread American practice of putting babies in separate beds-even separate rooms- and not responding to their cries may lead to more incidents of post-traumatic stress and panic disorders among American adults" (http://www.naturalchild.org/research/harvard_attention.html). CS, C</p> <p>8. "I believe the semantics of whether it is controlled crying or comforting means nothing and the overriding impact is of dominance and restraint- a dominant attitude but the parent of 'you will do what I say' and a restraint from nurturing-an 'I mustn't get too close to me</p>		

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Website	Relevance	Quotes	Sources/research cited	Findings of research cited
		<p>because I will no longer be in control" (http://www.breastfeeding.asn.au/bfinfo/crying.html). IA</p> <p>9. Early traumatic experiences that affect the formation of the limbic and subcortical areas of the brain result in extreme anxiety, depression and a lack of ability to form healthy attachments" (www.bawlingbabies.blogspot.co.nz, 2012). IA, C</p> <p>9. "Secure attachment in infancy is the foundation for adult mental health...a major need for secure attachment is for a parent to respond to infants needs and cues. It is important not to leave your baby to cry" (www.bawlingbabies.blogspot.co.nz, 2012). IA</p> <p>10. "Infants are more likely to develop secure attachments when their distress is responded to promptly, consistently and appropriately" (www.bawlingbabies.blogspot.co.nz, 2012). IA</p>		
Website F. www.centreforattachmentment.com		<p>1. "The main difference between stress that is tolerable to a baby and stress that is toxic is the presence of a sensitive and responsive caregiver to help deal with that stress" (/index.php?option=com_content&task=view&id=26&Itemid=45). C</p> <p>2. "Every time babies fall asleep they are faced with the job of temporarily being out of contact with the presence and security of their caregiver. For this reason, going to sleep is often an experience of separation that can produce stress and anxiety if not handled sensitively" (/index.php?option=com_content&task=view&id=26&Itemid=45). IA, C</p> <p>3. "Sleep training poses a further threat to the attachment relationship by effectively training caregivers to desensitise themselves to their baby's cues. It is not only the baby who is at immediate risk from them, but the caregiving system as well" (/index.php?option=com_content&task=view&id=26&Itemid=45). PR, IA</p>	<p>A1. Anisman, H., Zaharia, M.D., Meaney, M.J., Merali, Z. (1998). Do early-life events permanently alter behavioural and hormonal responses to stressors? <i>International Journal of Developmental Neuroscience</i>, 16(3-4): 149-64. E</p> <p>A2. Gunnar, M.R. (1989). Studies of the human infant's adrenocortical response to potentially stressful events, <i>New Directions for Child Development</i>, Fall: 3-18. Research. E</p> <p>A3. Hofer, M.A. (1996). On the nature and consequences of early loss, <i>Psychosomatic Medicine</i> 1996; Nov-Dec; 58(6):570-81. E</p> <p>A4. Ludington-Hoe, S.M., Cong, X., Hashemi, F. (2002). Infant crying: nature, physiologic consequences, and select interventions, <i>Neonatal Network</i>, Mar 21: 29-36. E</p> <p>A5. Middlemiss, W. (2004). Infant</p>	<p>A1. Describes individual differences in emotionality; early life stimulation of the pups may reduce CRR and AVP in the neurons of PVN. As a result, the former animals are better equipped to deal with stressors encountered in adulthood, and conversely the latter animals may exhibit exaggerated responses to aversive events.</p> <p>A2. Review of research. Summary points: (1) The adrenocortical system is responsive to stimulation at birth. (2) Increases in cortisol are not always as associated with behavioural distress in the infant. (3) At least under certain conditions, the infant appears to rapidly habituate or attenuate its response with repeated exposure to the same events.</p> <p>A3. Explore basic questions about the nature of loss. Results: long term effects of loss, and of selective replacement of regulators, on behavioural development and later vulnerability to disease.</p> <p>A4. Describes the nature of infant crying and appropriate nursing interventions. Caregivers are</p>

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Website	Relevance	Quotes	Sources/research cited	Findings of research cited
		<p>4. "If you have experimented with some of these sleep training techniques and would like to pursue a more secure connection with your child, there are things you can do. It is never too late to repair your relationship" (/index.php?option=com_content&task=view&id=24&Itemid=45). IA</p> <p>5. "When sleep is entered into in this fashion, it is not peaceful sleep earned by a process of self-soothing, nor has the baby finally grasped self-settling skills. This is instead the second phase of the stress response...entered a stage of dissociation. When our babies are too flooded with stress they have to shut down" (/index.php?option=com_content&task=view&id=24&Itemid=45). C</p>	<p>sleep: A review of normative and problematic sleep and interventions. <i>Early Child Development and Care</i>, 174: 99-122. E</p> <p>A6. Morelli, G.A., Rogoff, B., Oppenheim, D., Goldsmith, D. (1992). Cultural variation in infants' sleeping arrangements: questions of independence. <i>Developmental Psychology</i>, 28(4), 604-613. E</p> <p>A7. Segawa, M. (2006). Epochs of development of the sleep-wake cycle reflect the modulation of the higher cortical function particular for each epoch. <i>Sleep and Biological Rhythms</i>, 4: 4-15. E</p>	<p>encouraged to answer infant cries swiftly, consistently and comprehensively.</p> <p>A5. Review normative sleep patterns for infants, factors that affect sleep patterns and the effectiveness of intervention and prevention implemented. Results: Caregivers are encouraged to answer infant cries swiftly, consistently, and comprehensively.</p> <p>A6. Examine 18 US and 14 Highland Mayan parents regarding sleep arrangement during their first 2 years. Results: All 14 Mayan infants slept with their mothers. None of the 18 US infants did although they slept close until 3-6 mo.</p> <p>A7. Describes sleep-wake (S-W) rhythm controlled by the aminergic neurons of the brainstem which have important roles with critical ages during maturation of the central nervous system (CNS).</p>
<p>Website G. www.evolutionaryparenting.com Tracy Cassels, Clinical Psych</p>	Opposed	<p>1.* On Price et al (2012) "the authors did not provide evidence that there were no long-term effects. In fact, given the use of intention-to-treat for a treatment that had a 58% agreement rate and randomized allotment, the authors can make very few conclusions at all" (/a-not-so-blind-review-of-the-cio-research/). BF</p> <p>2.* On France and colleagues "what is the problem with this research? Largely the method of assessing "self-soothing" is simply the extinction of crying" (/educating-the-experts-lesson-four-self-soothing/). PR, ESI</p> <p>3.* "The only research we have on that comes from Dr Middlemiss and colleagues that found sleep training disrupted maternal-infant synchrony, at least temporarily" (/stress-and-synchrony-implications-for-sleep-training/). IA, C</p> <p>4.* "Jude Cassidy from Pennsylvanian State University reviewed research between attachment parenting and emotion regulation and found that infants who have parents who engage in practices</p>	<p>1.* Price, A.M.H., Wake, M., Okoumunne, O.C., Hiscock, H. (2012) Five year follow-up of harms and benefits of behavioural infant sleep interventions: randomized trial. <i>Pediatrics</i>, 130(4): E</p> <p>2a.* France, K.G. & Hudson, S.M. (1993). Management of infant sleep disturbance: A review. <i>Clinical Psychology Review</i>, 13: 635-647. E</p> <p>2b.* France, K.G. & Blampied, N. (2005). Modifications of systematic ignoring in the management of infant sleep disturbance: Efficacy and infant distress. <i>Child and Family Behavioural Therapy</i>, 27:1-16. E</p> <p>2c.* Healey, D., France, K.G., & Blampied, N. (2009). Treating sleep disturbances in infants: What generalizes? <i>Behavioural Interventions</i>, 24:23-41. E</p>	<p>1.* 5 year follow up study of 225 children following a behavioural infant sleep intervention. Results: behavioural sleep intervention have no effect positive or negative on children's mental health or their relationship with their parent. NRTQ</p> <p>2a.* Review of treatments regimes for infant sleep disturbance. RTTQ</p> <p>2b.* 15 infants in 3 intervention groups systematic ignoring, systematic ignoring with minimal checking or parental presence. Results: All lead to decreases in night waking. The minimal check group cried more. NRTQ</p> <p>2c.* Investigate the immediate and generalized effects of treating bedtime settling problems in 7 infants (6-20mths). Results: Clinically significant reductions in 5 out of the 7 infants. Parents have to change their management across context that the sleep problems occur. NRTQ</p> <p>3.* Measure cortisol of 25 infants and their mothers on Day 1 & 3 of a 5 day inpatient sleep</p>

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Website	Relevance	Quotes	Sources/research cited	Findings of research cited
		<p>that promote secure attachment, particularly responsiveness to distress, have children who demonstrate better emotion regulation than those who show insecure attachment" (/educating-the-experts-lesson-four-self-soothing). AP</p> <p>5.* "Breastfeeding moms may wake more often, but report greater total sleep" (/normal-infant-sleep-part. i/). BF</p> <p>6.* "Children who are securely attached, who bed-share, who are worn in slings, tend to be as, if not more, independent than their counterparts" (/crying it out supported-by-everyone). CS</p> <p>7.* "I see none of this providing much evidence of anything, except that sleep training helps parents" (/what-you-need-to-know-about-crying-it-out/). PR</p> <p>8. "Once again I find myself having to take apart research that has managed to make the rounds that is being held up as proposing that crying-it-out is good for babies. That they need it to learn how to sleep that they need to be left alone to learn how to self-settle. And it's sickening" (/does-a-new-study-really-support-leaving-your-child-to-cry). PR, ESI</p> <p>9. "What's amazing to me is that this natural course, as found by these researchers, shows that by 3 years of age, almost all children are sleeping through the night with few problems to do with night-waking or sleep disturbance" (/does-a-new-study-really-support-leaving-your-child-to-cry). ESI, DP</p> <p>10. "What is traumatic is having separation forced on you when you aren't prepared for it or even developmentally ready for it" (/crying-it-out-supported-by-everyone). IA, C</p>	<p>3.* Middlemiss, W., Granger, W.A., Nathans, L. (2012). A synchrony of mother-infant hypothalamic-pituitary-adrenal axis activity following extinction of infant crying responses induced during the transition to sleep. <i>Early Human Development</i>, p.227-232. E</p> <p>4.* Cassidy, J. (1994) Emotion regulation: Influences of attachment relationships. <i>Monographs of the Society for Research in Child Development</i>, 59:228-283. E</p> <p>5.* Elias, M.F., Nicolson, N.A., Bora, C. & Johnston, J. (1986). Sleep/wake patterns of breast-fed infants in the first 2 years of life. <i>Pediatrics</i>, 77: 322-329. E</p> <p>6.* Keller, M.A., Goldberg, W.A. (2004). Co-sleeping: help or hindrance for young children's independence? <i>Infant and Child Development</i>, 13: 369-388. E</p> <p>7.* Mindell, J.A., Kuhn, B., Lewin, D.S., Meltzer, L.J., Sadeh, A. (2006). Behavioural treatment of bedtime problems and night waking in infants and young children. <i>Sleep</i>, 29: 1263-1276. E</p> <p>8. Lupien, S.J., McEwan, B.S., Gunnar, M.R., Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behaviour, and cognition. <i>Nature Reviews</i> 2009; 10:434-445. E</p>	<p>training programme to learn to self-settle. Results: Researchers claim on the third day of the programme infants physiological and behavioural responses were dissociated. This research is extensively criticised for its methodology and claims in Chp 3 of this thesis. NRTQ</p> <p>4.* A discussion about emotion regulation and the quality of attachment. The function of emotional regulation serves as two proposes in the attachment relationship. One helping the child to remain close to their parent either by the infant minimising or maximizing their negative affect. Secondly by helping maintain the parents state of mind about the attachment relationship. NRTQ</p> <p>5.* 32 breastfed infants, followed for 2 years to collect data on 24 hour period of nursing and sleep. Results: increases length of sleep to 10 hours by 4 months. Breastfed, bed sharing infants had less sleep overall than those weaned going into their 2nd year. RTTQ</p> <p>6.* Investigates the relationship 83 mother/infant dyads sleeping arrangements and claimed positive and negatives to co-sleeping Results: solitary sleepers fell asleep alone, slept through the night, and weaned earlier than the co-sleepers. However, early co-sleeping children were more self-reliant and exhibited more social independence. NRTQ</p> <p>7*. Review of 52 treatment studies. Results: Across all studies 94% of behavioural interventions were efficacious. 80% of children clinically significant improvement maintained at 3 and 6 months. NRTQ</p> <p>8. Review of impact of chronic stress on brain structures involved in mental health and cognition.</p>
Website H.	Gives information	1.* AAIMH said (in 2004) that there have been no	1.* AAIMH (2004) Position Paper:	1.* States controlled crying is "not consistent

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www.huggies.co.nz Advice from Australian Agencies, Karitane, Queen Elizabeth Centre, Ngala, Tressilian.	on controlled crying but does not advocate before 6 months.	studies which measure the physiological stress or impact on infants who are exposed to Controlled Crying" (/baby-care-sleep-not-sleeping/ settling /controlledcrying . C 2. "Controlled crying continued to be a standard method of settling until the swell of research into children's emotional development from 2000 onwards. Currently it remains out of favour, particularly with the followers of attachment theory and is not one of the recommended options for settling young babies" (/baby-care-sleep-not-sleeping/ settling /controlledcrying). AP, PR 3. "It may have a place with toddlers and older children" (/baby-care-sleep-not-sleeping/ settling /controlledcrying). ESI	Controlled Crying.	with infants' and toddlers' needs for optimal emotional and psychological health and may have unintended negative consequences". References Perry and Pollard (1998) RTTQ
Website I. www.infantsleep.org http://www.infantsleep.org/images/WAIMH_Handout2.pdf Marcell Gordon, Antioch University	Advocate or not	1.* "Only five studies were found that investigated the existence of changes in post-CIO behaviour. Out of these three included infants" (/images/WAIMH_Handout2.pdf). ESI 2.* "Crying increases heart rate and blood pressure, reduces blood oxygenation, and propels the release of cortisol. Prolonged crying amplifies these effects" (/images/WAIMH_Handout2.pdf). C 3.* "Animal studies of extinction found that though behaviour appeared to adapt, physiology did not" (/images/WAIMH_Handout2.pdf). C 4.* "The dissociation of observed behaviour from adrenocortical activation makes it difficult to determine the absence of physiological stress simply by observing that the infant has fallen asleep" (/images/WAIMH_Handout2.pdf). C 5.* "The ability to modulate distress (self-soothe) depends on the timing, type and intensity of the stress experienced. Stressors that are manageable at 12 months, may be disorganising at younger ages" (/images/WAIMH_Handout2 .pdf). PR, C 6.* "Further, infant with difficulties in self-regulation are less capable of modulation intense	1a.* Eckerberg, B. (2004). Treatment of sleep problems in families with young children: effects of treatment on family well-being. <i>Acta Paediatrica</i> 93:126-134. E 1b.* France, K.G. (1992). Behavior characteristics and security in sleep-disturbed infants treated with extinction. <i>Journal of Pediatric Psychology</i> , 17(4), 467-475. E 2a.* & 4c.* & 5a*. Gunnar, M.R. & Donzella, B. (2002). Social regulation of the cortisol levels in early human development. <i>Psychoneuroendocrinology</i> ; Jan-Feb: 199-220. E 2b.* Ludington-Hoe, S.M., Cong, X., & Hashemi, F. (2002). Infant crying: nature, physiologic consequences, and select interventions. <i>Neonatal Network</i> 21(2):29-36. E 3.* Coe, C.L., Glass, J.C., Wiener, S.G., & Levine, S. (1983). Behavioural, but not physiological,	1.* Evaluate the effect of a two-step variation of graduated exposure on 95 families with infants 4-45 mths old. Results: Significant improvement arents experience young children's night awakenings as a problem quickly. According to parental ratings, family well-being and negative daytime behaviour are also improved. RTTQ 1b.* Effects of extinction behavioural intervention for ISD in 35 infants (6-24mths). Results: No evidence on detrimental effects. RTTQ 2a.* & 4c.* & 5a*. Review of studies of cortisol and behaviour in children (birth to 5yrs). High cortisol responsively of newborn diminishes and it becomes difficult to provoke increases in cortisol to stressors by the end of the first year. RTTQ 2b.* Describes the nature of infant crying and appropriate nursing interventions. Caregivers are encouraged to answer infant cries swiftly, consistently and comprehensively. RTTQ 3.*Mother infant squirrel monkeys were subjected to a series of brief separation (1 hr)

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		<p>stress or withdrawing from overwhelming stimuli. For these infants, who display a larger cortisol response to stress" (/images/WAIMH_Handout2.pdf). C</p> <p>7.* "For these infants, who display larger cortisol responses to stress, it is unknown how CIO impacts their neuropsychological development" (/images/WAIMH_Handout2.pdf). C</p> <p>8.* "Both researchers and popular parenting advice assert that an infant will not be harmed by the crying involved precipitated by CIO, however, no empirical evidence could be found to support this point." (/images/WAIMH_Handout2.pdf). C</p> <p>9. "Research to date submits that CIO is quick, effective, and without negative side-effects" (/cryingtoutresearch.html). ESI</p> <p>10. "Infants with difficulties in self-regulation are less capable of modulating intense stress or withdrawing from overwhelming stimuli. For these infants, who display a larger cortisol response to stress, it is unknown how CIO impacts their neuropsychological development" (/cryingtoutresearch.html). C</p>	<p>adaptation to repeated separation in mother and infant primates. <i>Psychoneuroendocrinology</i> 8(4):401-409. E</p> <p>4a.* Gunnar, M. R. (1987). Psychobiological studies of stress and coping. An introduction. <i>Child Development</i>, 1403-1407. E</p> <p>4b.* Gunnar, M.R. & Cheatham, C.L. (2003). Brain and behaviour interface: stress and the developing brain. <i>Infant Mental Health Journal</i> 24(3):195-211. E</p> <p>4c.* Gunnar, M.R., Mangelsdorf, S., Larson, M., & Hertsgaard, L. (1989). Attachment, temperament, and adrenocortical activity in infancy: a study of psychoendocrine regulation. <i>Developmental Psychology</i> 25(3):335-363. E</p> <p>5b.* Kopp, C.B. (1989) Regulation of distress and negative emotions: a developmental view. <i>Developmental Psychology</i> 25(3):343-354. E</p> <p>5c.* Spangler, G., Schieche, M., Ilg, U., Maier, U., & Ackermann, C. (1994). Maternal sensitivity as an external organizer for biobehavioural regulation in infancy. <i>Developmental Psychobiology</i> 27(7):425-437. E</p> <p>5d.* Schore, A.N. (2003). <i>Affect Regulation and the repair of the self</i>. W.W. Norton & Company INC New York, USA. O</p> <p>6.* Fox, N.A. & Calkins, S.D. (2003). The development of self-control of emotion: intrinsic and extrinsic influences. <i>Motivation and Emotion</i>, 27(1):7-26. E</p>	<p>Results: The separated infants showed a marked and progressive decrease in distress calling across time, but no change observed in high levels of agitated activity or the plasma cortisol response to separation. RTTQ</p> <p>4a.* Review of research. Summary points: (1) The adrenocortical system is responsive to stimulation at birth. (2) Increases in cortisol are not always as associated with behavioural distress in the infant. (3) At least under certain conditions, the infant appears to rapidly habituate or attenuate its response with repeated exposure to the same events. NRTQ</p> <p>4b.* Review of research shows that during the first year, sensitive and responsive care giving became a powerful regulator of emotional behaviour and neuroendocrine stress hormone activation in young children. NRTQ</p> <p>4c.* Examines the relations among adrenocortical stress reactivity, infant emotional or proneness-to-distress temperament, and quality of attachment in 66 infants tested at 9-13 mo. Results: Adrenocortical activity was not associated with attachment classifications. Emotional temperament at 9 months was strongly correlated with emotional temperament. There was also evidence that at both ages infants who were more prone to distress experienced greater increases in adrenocortical activity during the laboratory tests. NRTQ</p> <p>5b.* Review of the principles that underlie regulation of distress and negative emotions among infants and young children. Caregivers play a crucial role, but how and when they intervene is probably a function of situation, developmental level of the child, and caregiver belief. RTTQ</p> <p>5c.* Discusses the role of maternal sensitivity as an external organiser of psychobiological</p>

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			<p>7.* Gunnar, M.R., Brodersen, L., Nachmias, M., Buss, K. & Rigatuso, J. (1996). Stress reactivity and attachment security. <i>Developmental Psychobiology</i>, 29(3):191-204. E</p> <p>8a.* Blampied, N. M. & France, K. G. (1993). A behavioural model of infant sleep disturbance. <i>Journal of applied behavior analysis</i>, 26(4), 477-492. E</p> <p>8b.* Kuhn, B.R. & Weidinger, D. (2000). Interventions for infant and toddler sleep disturbance: a review. <i>Child and Family Behavior Therapy</i>, 22(2):33-50. E</p> <p>8c.* Owens, J.L., France, K.G. & Wiggs L. (1999). Behavioural and cognitive-behavioural interventions for sleep disorders in infants and children: A review. <i>Sleep Medicine Reviews</i>, 3(4):281-302. E</p>	<p>function in infants during the first year. Results: Age-specific patterns of relation between maternal sensitivity and infant behavioural organisation. An increase in cortisol was most frequently observed in infants of highly insensitive mothers. RTTQ</p> <p>5d.* Book</p> <p>6.* Reviews evidence that supports the notion that intrinsic and extrinsic factors contribute to the development of self-control of emotions. NRTQ</p> <p>7.* Discusses attachment security moderates the physiological consequence of fearful, inhibited temperament. Later attachment security was related to greater maternal responsiveness and lower cortisol baselines. Neither cortisol nor behavioural reactivity to the inoculations predicted later attachment classifications. NRTQ</p> <p>8a.* Describes a behavioural model of ISD. Biological factors and parental reinforcement of sleep incompatible behaviours may create and maintain ISD. Prevention and treatment is also discussed. NTTQ</p> <p>8b.* Reviews of behavioural and pharmacological interventions. Advantages and disadvantages of each approach is discussed. NRTQ</p> <p>8c.* A review of behavioural and cognitive behavioural interventions. Concludes some treatments appear effective for some infant child sleep problems, in the short term at least. NRTQ</p>
<p>+Website J. www.isisonline.org.uk UK baby friendly initiative. Evidence-based information. A collaboration between Durham</p>		<p>1.* "In most cases, however, children will learn to fall asleep by themselves when they are developmentally ready to do so, regardless of 'training; received' (/how_babies_sleep/sleep_training/consideration/). DP</p> <p>2.* "Extinction methods require mother and infant to decouple infant crying from consistent parental response; severing a link that is physically and</p>	<p>1a.* Lam, P., Hiscock, H., & Wake, M. (2003). Outcomes of infant sleep problems: A longitudinal study of sleep, behaviour, and maternal wellbeing. <i>Pediatrics</i>, 111(3): e203-e207. E</p> <p>2.* & 3.* Blunden, S., Thompson, K.</p>	<p>1a.* Investigate recurring, persisting, and resolving sleep problems, identify early predictors of later sleep problems and comorbidities of persistent or recurrent sleep problems at age 3-4yrs. Results: Persistent sleep problems common and associated with slightly higher child behaviour problems and maternal depression scores. RTTQ</p>

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University parent-infant sleep lab, La Leche League, NCT & UNICEF		<p>psychologically evolved to ensure infants' survival" (/hcp/how_babies_sleep/sleep_training/research_limitations/). PR, IA, C</p> <p>3.* "The closeness of mother and baby is promoted by a link that binds them together-the bond of attachment- and some researchers propose this bond is maintained by mothers and babies 'creating: and responding to 'cues;-crying, visual contact, touch' (/how_sleep/sleep_training/considerations/). PR, IA, C</p> <p>4.* On Middlemiss et al (2012) "the response of the babies in this study lends support to the theory that babies who undergo sleep training via extinction may be learning to 'give up' rather than to 'settle'...outwardly the two behaviours appear the same, but inwardly the babies physiology is very different" (/how_babies_sleep/sleep_training/considerations/). C</p> <p>5.* "Parents who use extinction methods frequently find the technique stressful and distressing" (/how_babies_sleep/sleep_training/considerations/). PR</p> <p>6. "Expecting a human baby to sleep alone, and for prolonged periods, is unrealistic and can be harmful" (/how_babies_sleep/why_babies_sleep_as_they_do). CS</p> <p>7. "Many 'effective' sleep training methods have focussed on managing babies' crying rather than their sleep per se. Recent work suggested that sleep training may disrupt both biological and behavioural mother-infant relationships, this in turn may harm babies' physical, social, emotional and behavioural development" (isis.online/pdfs/ISISPDFSleetraining). ESI, C</p>	<p>& Dawson, D. (2011) Behavioural sleep treatments and night time crying in infants: Challenging the status quo. <i>Sleep Medicine Reviews</i>, 15:327-334. E</p> <p>4.* Middlemiss, W., Granger, W.A., Nathans, L. (2012). A synchrony of mother-infant hypothalamic-pituitary-adrenal axis activity following extinction of infant crying responses induced during the transition to sleep. <i>Early Human Development</i>, /227-232. E</p> <p>5.* Tse, L. & Hall, W. (2008). A qualitative study of parents' perceptions of a behavioural sleep intervention. <i>Child: care, health and development</i>, 34(2), 162-172. E</p> <p>6. Volpe, L., Ball, H.L. & McKenna, J.J. (2013). Nighttime parenting strategies and sleep related risks in infants. <i>Social Science & Medicine</i>, 79: 91-100. E</p> <p>7. Ball, H.L., Moya, E., Fairley, L., Westman, J., Oddie, S. & Wright, J. 2012. Bed and sofa-sharing practices in a UK bi-ethnic population. <i>Pediatrics</i>, 129(3): e673-e681. E</p>	<p>2.* & 3.* Reviews current sleep training techniques and how they suit or not the needs of infants and their parents. It questions the extent to which they can be reconciled. NRTQ</p> <p>4.* Measure cortisol of 25 infants and their mothers on Day 1 & 3 of a 5 day inpatient sleep training programme to learn to self-settle. Results: Researchers claim on the third day of the programme infants physiological and behavioural responses were dissociated. This research is extensively criticised for its methodology and claims in Chp 3 of this thesis. NRTQ</p> <p>5.* 14 caregivers were interviewed following a qualitative intervention for their infants behavioural sleep difficulties. 9 themes were produced during the content analysis including factors interfering with successful interventions which had a subtheme of parents fears about crying causing harm. RTTQ</p> <p>6. 4 case studies conducted overnight observation of first time mothers and their 4 mo infants. Provides examples of mothers engaging in the strategic management of nighttime parenting who making compromises in infant care. Mothers assess potential costs and benefits within margins of risk which are not acknowledged be risk-reduction campaigns.</p> <p>7. Describe the prevalence and associations of bed-and sofa-sharing in a bi-ethnic UK birth cohort. Infants aged between 2-4 mo. Results 15.5% of families that had bed-shared, 7.2% if families regularly bed-shared, and 9.4% of families had ever sofa-shared with their infants. 1.4% had done both.</p>
Website K.	Opposed to cry it	1.* "Studies on normal infant sleep" (/parenting/	1a.* Armstrong, K.L., Quinn, R.A. &	1a.* Survey of 3269 parents to determine the

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<p>www.kellymom.com</p> <p>Evidenced based on breastfeeding, sleep and parenting</p>	<p>out method, no mention of other methods, graduated exposure etc</p>	<p>nighttime/sleepstudies/). DP</p> <p>2. "Your baby will begin to comfort herself and to sleep for longer stretches at her own development pace" (/parenting/nighttime. sleep/). PR, DP</p> <p>3. "Remember night waking in babies and young children is normal and temporary" (/parenting/nighttime.sleep/). PR, DP</p> <p>4. "Younger babies, do not have that sense of object permanence, they are developmentally unable to realise that she is in the next room" (/bf/normal/ comfortnursing/). PR</p> <p>5. "In my opinion, this "sleep training" often creates an unhealthy attitude about sleep: after going through this training, baby tends to view sleep as a fearful state to enter into and to remain in" (/bf/normal/c omfortnursing/). ESI, IA</p>	<p>Dodds, M.R. (1994). The sleep patterns of normal children. <i>Medical Journal of Australia</i>, 161(3):202-206. E</p> <p>1b.* Elias, M.F., Nicholson, N.A., Bora, C. & Johnston, J. (1986). Sleep/wake patterns of breast-fed infants in the first two years of life. <i>Pediatrics</i> 77(3) 322-329. E</p> <p>1c.* Goodlin-Jones, B.L., Gaylor, E.E., & Anders, T.F. (2001) Night waking, sleep-wake organisation, and self-soothing in the first year of life. <i>Journal of Development and Behavioural Pediatrics</i>, 22(4):226-233. E</p> <p>1d.* Harrison, Y. (2004) The relationship between daytime exposure to light and night-time sleep in 6-12-week-old infants. <i>Journal of Sleep Research</i> 13(4):345-352. E</p> <p>1e.* Sadler, S. (1994) Sleep: what is normal at six months? <i>Professional Care Mother Child</i>, 4(6):166-167. E</p> <p>1f.* Scher, A. (1991) A longitudinal study of night waking in the first year. <i>Child Care Health Development</i>, 17(5):295-302. E</p> <p>1g.* Scher, A. (2001) Attachment and sleep: a study of night waking in 12 month old infants. <i>Developmental Psychobiology</i>, 38(4): 274-285. E</p> <p>1h.* AAIMH position paper on controlled crying. O</p>	<p>range of sleep behaviour in children to age 38months. 28.6% have problems with their child's sleep behaviour.</p> <p>1b.* 32 breastfed infants, followed for 2 years to collect data on 24 hour period of nursing and sleep. Results: Breastfed, bed sharing infants had less sleep overall than those weaned going into their 2nd year.</p> <p>1c.* Examine 80 infants (3,6,9 or 12 mnths nighttime awakening and parental interaction. Results: Although the 12 month old babies exhibited a greater proportion of self-soothing after night time awakenings, 50% requires parental intervention to get back to sleep. RTTQ</p> <p>1d.* Investigated relationship between light exposure and sleep, crying in 56 (6,9& 12 week old) infants. Results: Infants who slept well at night were exposed to more light in early afternoon. Light in normal domestic setting influences the development of the circadian system. RTTQ</p> <p>1e.* 640 babies 80% not sleeping through night at 6 months, 50% woke occasionally, 17% woke more than once a night. RTTQ</p> <p>1f.* Mothers of 118 infants completed a sleep questionnaire Results: regular night waking common through the first year, increase at 9 months. RTTQ</p> <p>1g.* 94 mother-infant dyads Part of a longitudinal investigation of infant sleep. Results: When infants were 12mnths sleep characteristics only marginally associated with the quality of the child's attachment relationship. RTTQ</p> <p>1h.* States controlled crying is "not consistent with infants' and toddlers' needs for optimal emotional and psychological health and may have unintended negative consequences". References Perry and Pollard (1998)</p>

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Website L. www.ohbaby.co.nz Different guest writers Sharlene Poole, NZ Baby Whisperer		1. "Parents want both things: they would like their baby to self-settle and sleep in their own bed, but they don't want him to cry. I think most babies don't need to be left to cry for more than 3-5 mins however, there are times when parents may have to leave them for longer" (/baby/sleep/help-my-baby-wont-sleep-tips-from-sharlene-poole/). PR , CS	No references.	
Website M. www.parentingscience.com Infant sleep problems: a guide for the science-minded parent. http://www.parentingscience.com/infant-sleep-problems.html Gwen Dewar, PhD trained in anthropology, behavioural ecology, primatology & evolutionary and comparative psychology	Advocates for extinction with parental presence	1.* "When babies fall asleep at the breast or are placed in the cribs after they have fallen asleep - babies are less likely to sooth themselves back to sleep when they awaken again in the night.... So it seems that each parent must decide for herself how important self-soothing is" (/infant-sleep-problems). BF 2. "Infants under 12 months may not be old enough to understand their absent caregivers haven't abandoned them" (/infant-sleep-problems). PR 3. "Parents who don't expect their children to fall asleep by themselves are less likely to report that their children have sleep problems" (/infant-sleep-problems). PR 4.* "One of the biggest problems with extinction sleep training is that parents find it to be too upsetting" (/infant-sleep-problems). ESI 5.* "Crying is associated with physiological markers of stress (like elevated heart rate, blood pressure, and cortisol levels) and reduced oxygen levels" (/infant-sleep-problems). C 6.* "Often successful, in that children who complete these programmes are less likely to disturb their parents at night" ... no negative side effect in day time behaviour" (/infant-sleep-problems). ESI 7.* "Some researchers, paediatricians, and parents	1.* Anders, T.F., Halpern, L.F., and Hua J. (1992). Sleeping through the night: A developmental perspective. <i>Pediatrics</i> 90(4): 554-560. E 1b.* Ferber, R. (1986). Sleepless child. In: C. Guilleminault (Ed), Sleep and its disorders in children. New York: Raven Press, pp. 141-163. O 1c.* Goodlin-Jones, B.L., Burnham, M.M., Gaylor, E.E., and Anders, T.F. (2001). Night-waking, sleep organisation, and self-soothing in the first year of life. <i>Journal of Developmental Behavioural Pediatrics</i> 22(6): 226-233. E 4.* France, K.G. & Blampied, N.M. (1999). Infant sleep disturbance: Description of a problem behaviour process. <i>Sleep Medicine Reviews</i> 3(4): 265-280. E 5a.* Levesque, B.M., Pollack, P., Griffin, B.E. & Nielsen, H.C. (2000). Pulse oximetry: What's normal in the newborn nursery? <i>Pediatric pulmonology</i> 30(5): 406-412. E 5b.* Luddington-Hoe, S.M., Cong, X., & Hashemi, F. (2002). Infant crying: nature, physiologic consequences, and	1.* Examine falling asleep and waking in 21 infants during the first 8 months of life. Results the pattern of bedtime sleep onset was related to sleep onset following an awakening in the middle of the night. Infants who used sleep aids were more likely to be put in their cribs awake at bedtime and were also more likely to return to sleep on their own. Problem sleeper identified by their mothers were still put in their cribs asleep at the beginning of the night. RTTQ 1b.* Chapter in a book 1c.* 80 infants in 4 age groups (3, 6, 9, 13 mo) were videomnography to code nighttime wakings and parent-child interaction. Results: Younger infants tended to need more parental intervention to return to sleep whereas older exhibited greater self-soothing abilities. However even at 2 months 50% still required parental intervention to get back to sleep. 4.* Review and identifies individual factors associated with sleep disturbance; interactive mechanisms and the relationship between learning and infant sleep disturbance. Description of these factors are organised into three models. RTTQ 5a.* Investigate normal values for pulse oximetry saturation (POS) in healthy newborn infants in the nursery. Results: Mean POS

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		<p>are concerned about the psychological and physiological costs of ignoring distressed infants at bedtime" (/infant-sleep-problems). C</p> <p>8.* "Certainly, the baby has learnt that crying won't bring her parents to her aid. Possibly she's also learnt that her parents are insensitive, they can't be trusted to respond to her needs" (/in fant-sleep-problems). PR</p> <p>9. "Positive routines with faded bedtime" (/infant-sleep-training.html). ESI</p> <p>10. "Studies have tested positive routines on children, but these studies included positive routines as part of a package of other infant sleep training methods. As a result, it isn't possible to say which methods had the greatest effects" (/infant-sleep-training.html). ESI</p> <p>11. "When this method of infant sleep training (extinction with parental presence) was tried on sleep disturbed infants ages 6-24 months, infants slept longer and experienced fewer night wakings" (/infant-sleep-training.html). ESI</p> <p>12. "Similar approach, in which parents stay in the same room with baby but sleeps in a diffident bed, has also reported successful results" (/infant-sleep-training.html). CS</p> <p>13. "Do the intensified crying bouts-the so-called "Extinction burst"-associated with the Ferber method put babies at risk? No one has tested this hypothesis yet" (/Ferber-method.html). PR, C</p> <p>14. "Babies sometimes make noises...and may even cry out...when they are still asleep or only partially aroused. If you jump too soon, you might actually find yourself waking a sleeping baby" (/infant-sleep-problems/). PR</p>	<p>select interventions. <i>Neonatal Network</i> 21 (2): 29-36. E</p> <p>6.* Mindell, J.A., Kuhn, B., Lewin, D.S., Meltzer, L.J., Sadeh, A. & The American Academy of Sleep Medicine. (2006). Behavioral treatment of bedtime problems and night wakings in infants and young children. <i>Sleep</i> 29: 1263-1281.E</p> <p>7* &8*. Sears, W and Sears, M. (1996). The fussy baby book: Parenting your high-need child from birth to age five. New York: Little, Brown and Company. O</p> <p>9. Adams, L.A. & Rickert, V.I. (1989). Reducing bedtime tantrums: Comparison between positive bedtime routines and graduated extinction. <i>Pediatrics</i> 84(5): 756-761. E</p> <p>10. Sadeh, A. (1994). Assessment of intervention for infant night waking: Parental reports and activity-based home monitoring. <i>Journal of Consulting and Clinical Psychology</i> 62(1):63-68. E</p>	<p>values increase to a small degree with increasing postnatal age. Fussy and crying newborns have lower POS values compared to quiet and sleeping newborns. RTTQ</p> <p>5b.* Describes the nature of infant crying and appropriate nursing interventions. Caregivers are encouraged to answer infant cries swiftly, consistently and comprehensively RTTQ</p> <p>6.* Review of 52 behavioural treatment studies for bedtime problems and Night waking in Infants and young children. Results 94% report that behavioural interventions were efficacious, with 80% of children treated demonstrating clinically significant improvement that was maintained for 3 to 6 months. RTTQ</p> <p>7*&8*. Parenting resource</p> <p>9. 36 toddlers and preschool children exhibiting bedtime children exhibiting bedtime tantrum activity were randomly assigned to one of three groups: positive routines, graduated extinction, or control. Results: Children in the two treatment groups had tantrums less frequently and for shorter periods than control subjects during 6 weeks of treatment and during 3 & 6 week follow up.</p> <p>10. Results Highlight some of the advantages as well as some of the limitations of actigraphic and parental monitoring of infant sleep, and they suggest that the two methods may have complementary roles in assessing intervention efficacy in this field.</p>
Website N. www.psychologytoday.com Moral Landscapes,	Opposes cry it out	<p>1. "Letting babies get distressed is a practice that can damage children and their relational capacities in many ways for the long term. Leaving babies to cry is a good way to make a less intelligent, less</p>	<p>1. Bugental, D. B., Martorell, G.A., & Barraza, V. (2003). The hormonal costs of subtle forms of infant maltreatment. <i>Hormones and</i></p>	<p>1. Conclusion Trauma at different stages of development may influence the nature of memory deficits and hippocampal atrophy. Trauma and the brain.</p>

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<p>Darcia Narvaez, Professor of Psychology at Notre Dame</p> <p>Co-authors of articles include Wendy Middlemiss James McKenna Sarah Ockwell- Smith Tracey Cassels Kathleen Kendall- Tackett Helen Stevens</p>		<p>healthy but more anxious, uncooperative and alienated person" (/blog/moral-landscapes/201112/dangers-crying-it-out). PR, IA, C</p> <p>2. "Occurring to a behaviourist view completely ignorant of human development, the child 'has to be taught to be independent'. We can now confirm that forcing independence on a baby leads to greater dependence." (Dangers of crying it out. Babies don't self-comfort in isolation. If they are left to cry alone, they learn to shut down in face of extensive distress-stop growing, stop feeding, stop trusting)"/(blog/ moral-landscapes/201112/dangers-crying-it-out). PR, IA</p> <p>3. "Study after study shows that breastfed babies wake up more often than bottlefed babies" (/blog/moral-landscapes/201301/baby-sleep-training-mistakes-experts-and-parents-make). BF</p> <p>5. "Controlled crying should never be presented as the default, best or only option. But it is difficult to say that it should never, ever be an option that might be right for certain parents (based on consideration of a number of factors)" (/201301/baby_sleep-training-mistakes-experts-and-parents-make). ESI</p> <p>4. "Sleep experts typically don't like to talk about breastfeeding at length because they can't be seen to be anti-breastfeeding. But their focus/obsession is that babies simply have to sleep through the night" BF</p>	<p><i>Behaviour</i>, 43: 237-244. E</p> <p>2. Dawson, G., Ashman, S.B., Carver, L.J. (2000). The role of early experience in shaping behavioural and brain development and its implications for policy. <i>Development and Psychology</i> 12(4) 695-712. E</p>	<p>2. Aim Review of literature on the effects of early experience on early brain and behavioural development and later outcome and risk for psychopathology. Early experience and the brain. Results Pre and postnatal years are sensitive period with respect to the effects of stress on the developing nervous system and behavioural outcomes. Parental mental health during the first years of life has a significant influence on early brain activity and behaviour and long-term behavioural outcomes. Maternal mental health influence on brain development.</p>
<p>Website O. www.purplecrying.info</p> <p>Author of article: Ian St James- Roberts, PhD. Professor of Child</p>		<p>1. "If parents lack support from others or experience depression this can also affect a parent's ability to cope with night waking" (/sub-pages/sleeping /preventing-or-managing-infant-sleeping-php). PR</p> <p>2. "Parents need to choose the form of parenting which fits their values, needs and circumstances best." (/sub-pages/sleeping /preventing-or-</p>	No named references cited	

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Psychology		managing-infant-sleeping-php). PR 3. "If parents wish to prevent their infant from waking and signalling in the night after 3-4 months of age, there is evidence that using 'structured' parenting from about 6 weeks of age is likely to help" (/sub-pages/sleeping /preventing-or-managing-infant-sleeping-php). DP		
Website P. www.thesleepstore.co.nz Run by a couple in Auckland, no indication who writes the information	Advocate for sleep training Article on sleep challenges of 9 month olds	1. "If your baby continues to be unable to self-settle after the issues mentioned have passed or your baby has always had issues at bedtime or woken in the night, then consider starting a sleep training programme... While no one likes to hear their baby crying, the quicker you teach your baby to settle and resettle themselves in the night, the far less crying you will get overall" (/sleep-information/infant-sleep/sleep-information/sleep/). PR, DP	No references.	
Website Q. http://en.wikipedia.org/wiki/Infant_sleep_training Wikipedia		1.* "By about 6 months, most infants can sleep 8 hours or more at night uninterrupted or without parental intervention upon waking." PR 2. "It is important to have structure in the way a child is put to sleep so that they can establish good sleeping patterns. Researchers have found that babies learn how to fall asleep through a process called operant conditioning, by use of reinforcement. Sleep will reinforce the behaviors that precede it". 3.* "Researchers believe that infants classified as "difficult," as well as those who are very sensitive to changes in the environment, tend to have a harder time sleeping through the night. Parents whose infants sleep through the night generally rate their infant's temperaments more favourably than parents whose infant continue to wake; however, it is hard to determine if a given temperament causes sleep problems or if sleep problems promote specific temperaments or behaviours".	1.* Henderson, J.M.T., France, K.G. & Blampied, N.M. (2011). The consolidation of infants' nocturnal sleep across the first year of life. <i>Sleep Medicine Reviews</i> . 15(4):211-220. E 2.* Mayes, L.C. & Cohen, D.J. (2002). <i>The Yale Child Study Center Guide to Understand Your Child</i> . United States: Little, Brown and Company. O 3* Pinilla, T. & Birch, L.L. (1993). Help me make it through the night: behavioural entrainment of breastfed infants' sleep patterns. <i>Pediatrics</i> , 91(2), 436-444. E	1.* Investigate consolidation of 75 infants self-regulated night time sleep over first year. Results: Most rapid consolidation in first 4 months. At 2 and 3 months most infants sleeping through the night 22.00 to 06.00 hours. RTTQ 2. * Parenting resource- reference guide for developmental issues written by psychiatrists, psychologists, pediatricians, social workers and educators at Yale University School of Medicine's Child Study Center. RTTQ 3.* Investigate whether exclusively breast-fed 8 week old infants could learn to sleep through the night 12am-5am. Results: Parents supported breast-fed infants to lengthen nighttime sleep bouts, & continue breastfeeding. RTTQ

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